The PHOTOFACT® Servicer

SET 473 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ FEB., 1960

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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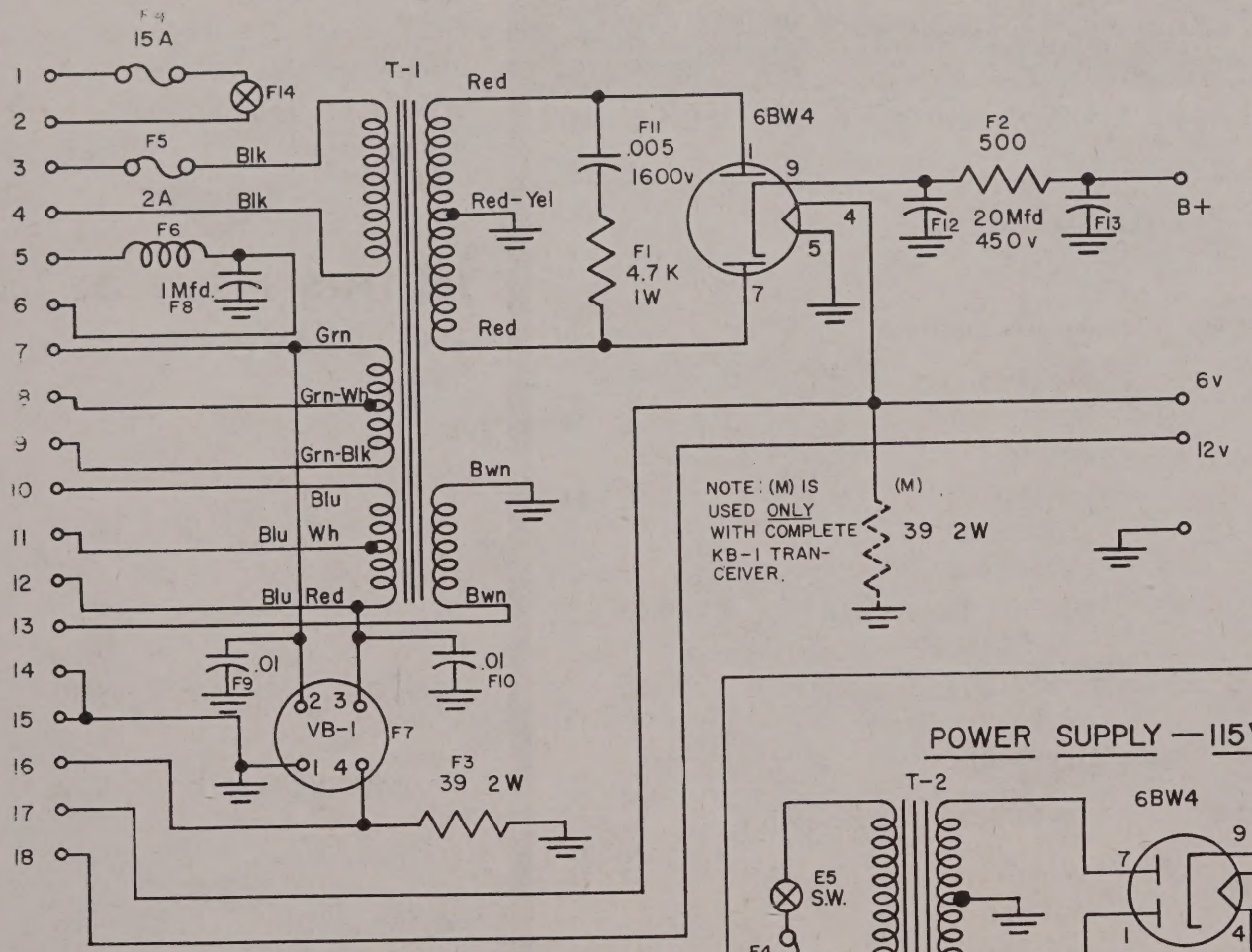
International Crystal

Model KB-1

POWER SUPPLY

6V.-12V.D.C. & 115 V.A.C.



POWER SUPPLY CONNECTIONS

115 V.A.C.

115 VAC TO PINS 1 AND 4
JUMPER PINS 2 TO 3
13 TO 17
15 TO 18

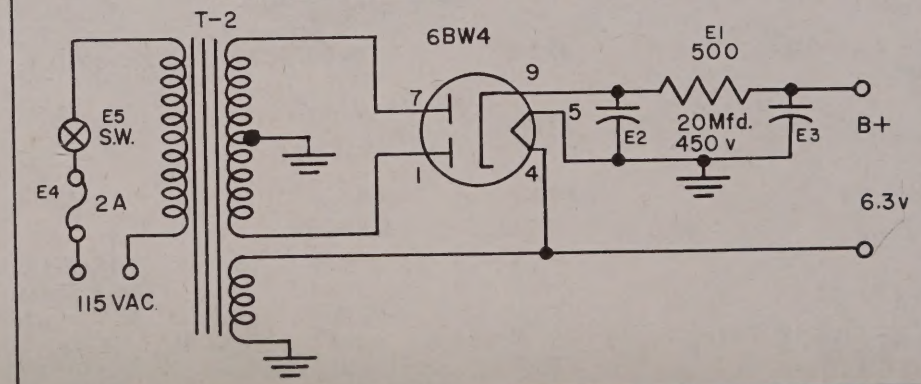
6 V.D.C.

6V. HOT TO PIN 1
6V. GND. TO PIN 14
JUMPER PINS 2 TO 5
6 TO 8
8 TO 11
7 TO 10
9 TO 12
17 TO 5
15 TO 18
15 TO 16

12 V.D.C.

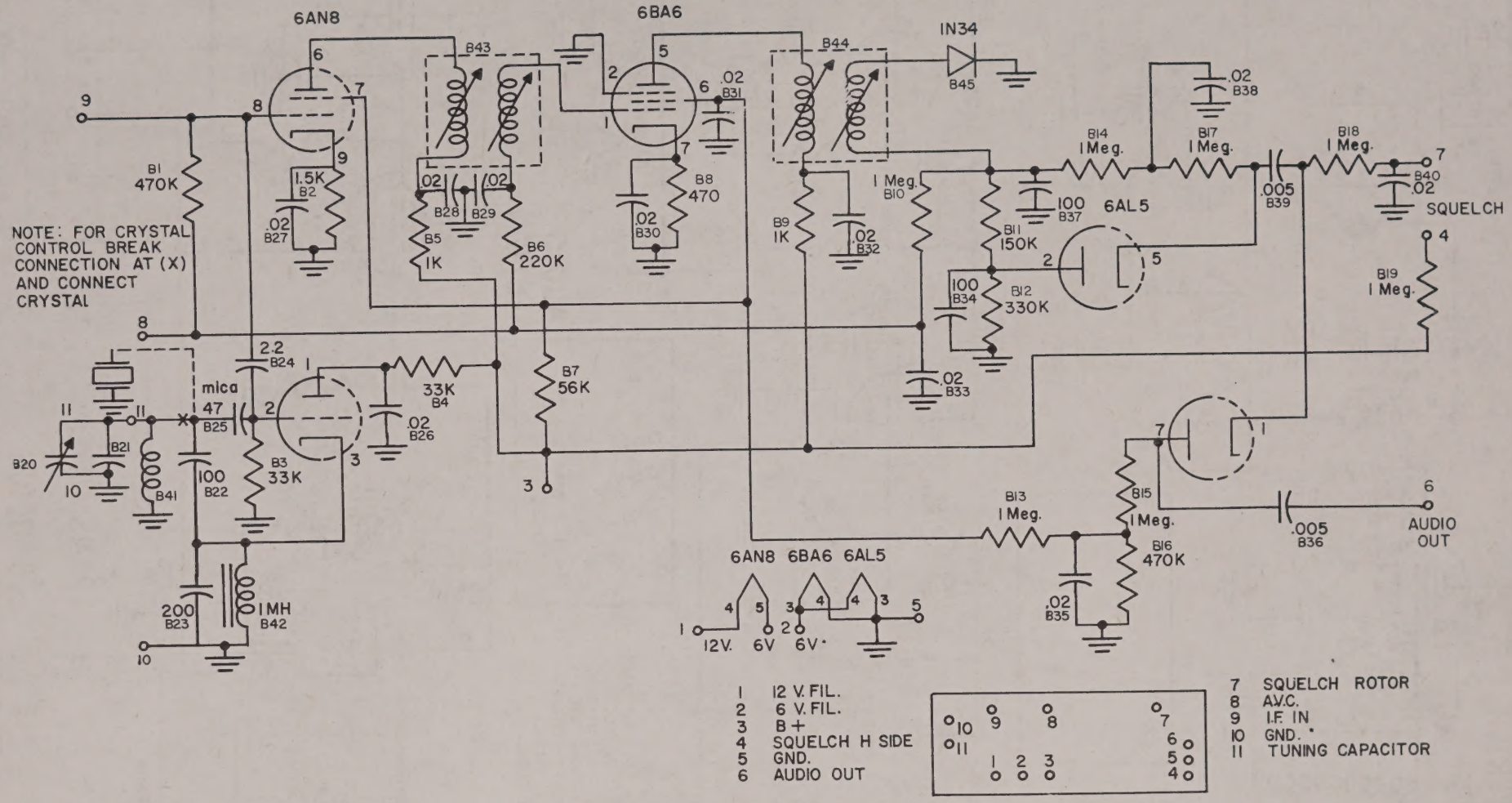
12 V. HOT TO PIN 1
12 V. GND. TO PIN 14
JUMPER PINS 2 TO 5
6 TO 9
9 TO 10
5 TO 18

POWER SUPPLY — 115 V.A.C. ONLY



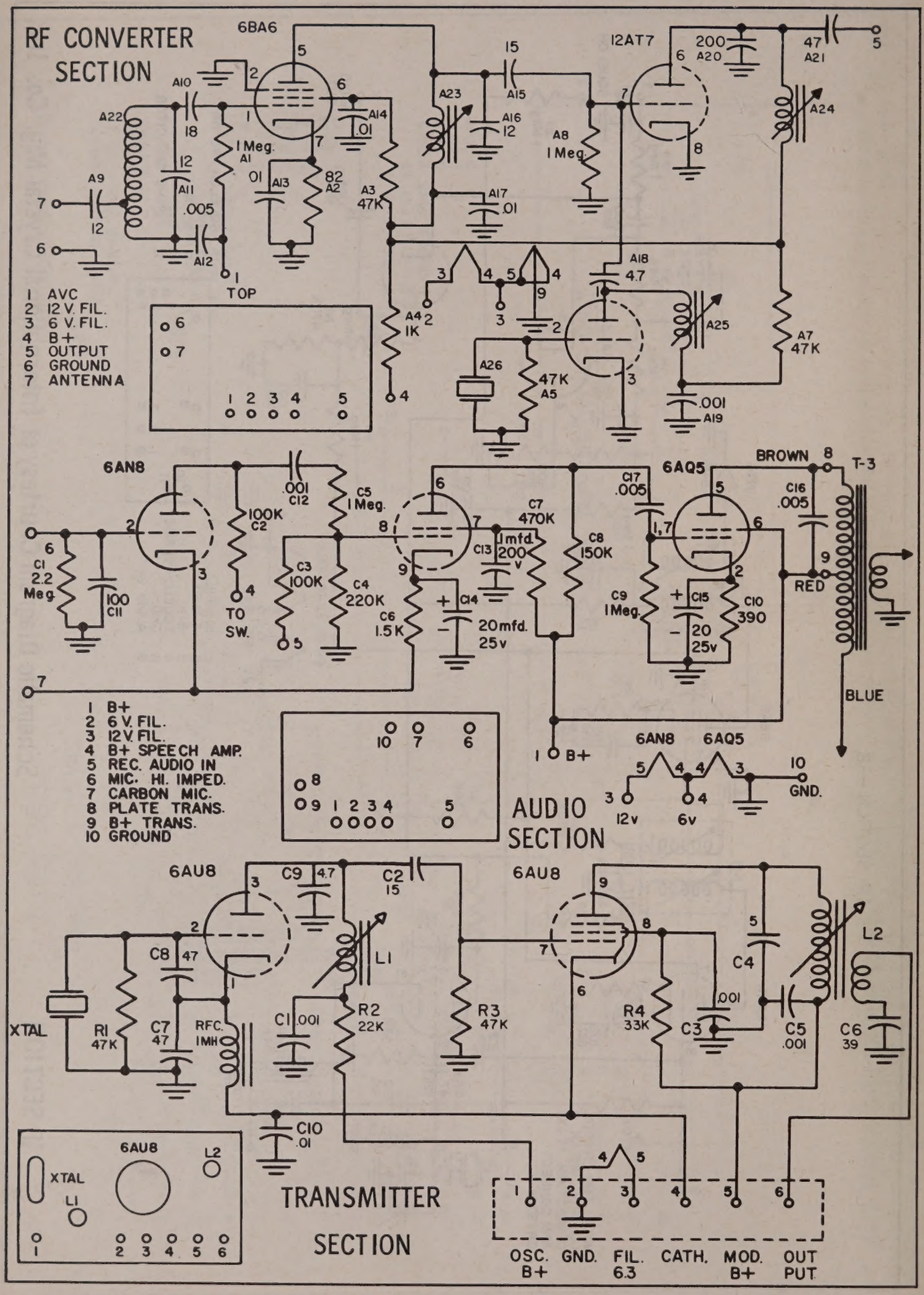
INTERNATIONAL CRYSTAL MODEL KB-1

I.F. SECTION — B



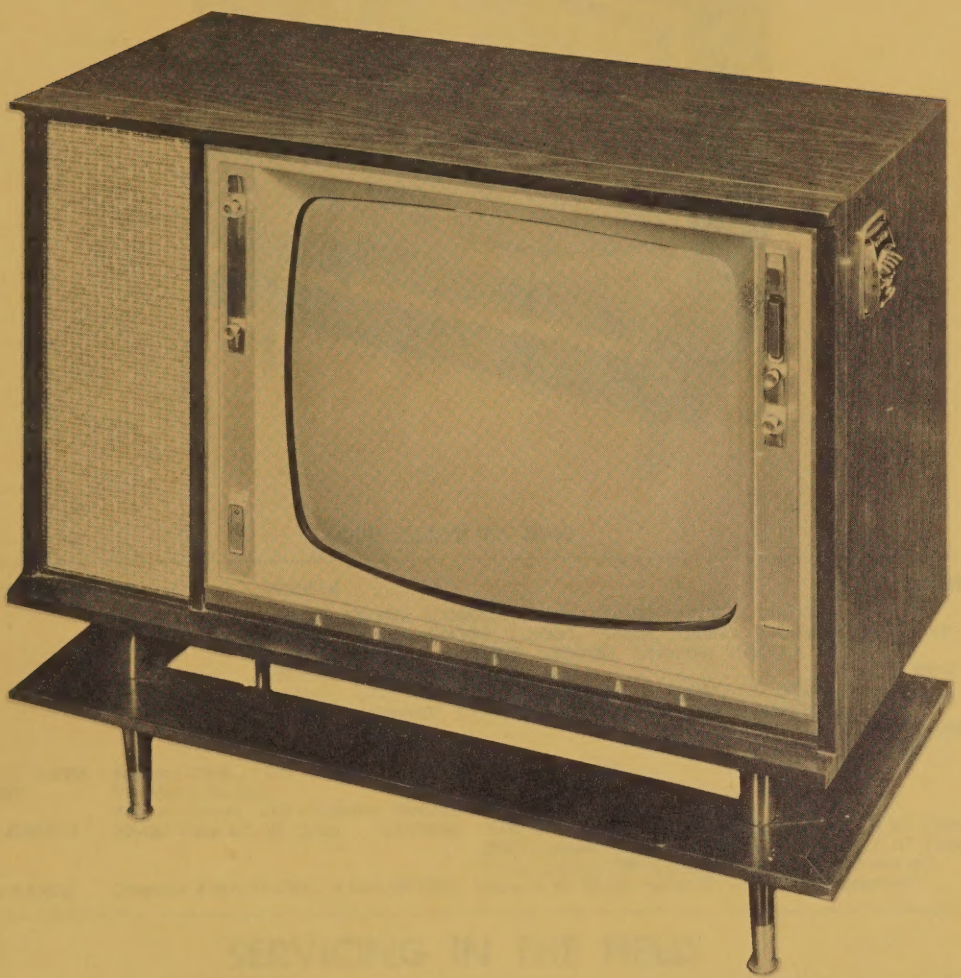
IF SECTION

Schematic Diagram Courtesy of International Crystal Mfg. Co. Inc.


RF CONVERTER SECTION
6BA6
12AT7
A1 1 Meg.
A2 82
A3 47K
A4 1K
A5 47K
A7 47K
A8 1 Meg.
A9 12
A10 18
A11 12
A12 .005
A13 .01
A14 .01
A15 15
A16 12
A17 .01
A18 4.7
A19 .001
A20 200
A21 47
A22
A23
A24
A25
A26
TOP
1 AVC
2 12 V. FIL.
3 6 V. FIL.
4 B+
5 OUTPUT
6 GROUND
7 ANTENNA
6AN8
6AQ5
BROWN
T-3
RED
BLUE
C1 2.2 Meg.
C2 100K
C3 100K
C4 220K
C5 1 Meg.
C6 1.5K
C7 470K
C8 150K
C9 1 Meg.
C10 390
C11 100
C12 .001
C13 1 mfd. 200 v
C14 20 mfd. 25v
C15 20 25v
C16 .005
C17 .005
TO SW.
1 B+
2 6 V. FIL.
3 12 V. FIL.
4 B+ SPEECH AMP.
5 REC. AUDIO IN
6 MIC. HI. IMPED.
7 CARBON MIC.
8 PLATE TRANS.
9 B+ TRANS.
10 GROUND
6AN8 6AQ5
12v 6v
GND.
AUDIO SECTION
6AU8
6AU8
XTAL
R1 47K
R2 22K
R3 47K
R4 33K
C1 .001
C2 15
C3 .001
C4
C5 .001
C6 39
C7 47
C8 47
C9 4.7
C10 .01
L1
L2
RFC. 1MH
TRANSMITTER SECTION
OSC. B+
GND.
FIL. 6.3
CATH.
MOD. B+
OUT PUT

PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL CHASSIS
20G6, 20M6, 20UG6



ADMIRAL CHASSIS
20G6, 20M6, 20UG6

MODEL LS24M52 (Ch. 20M6)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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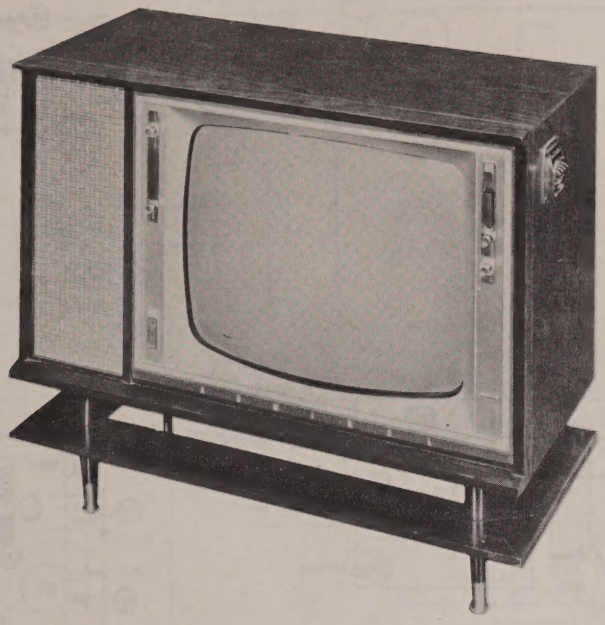
SET 473 FOLDER 1

PHOTOFACT® Folder with CIRCUITRACE*



MODEL LS24M52 (Ch. 20M6)

TRADE NAME	Admiral	MODELS	CHASSIS
		C24M21, C24M22, C24M23, C24M32, C24M33, C24M34, L24M22, L24M27, L24M31, L24M34, L24M37, T24M21, T24M22, T24M23	20G6
		CS24M52, CS24M57, LS24M52, LS24M53, LS24M54, TS24M52, TS24M53, (With Remote Control 7T1)	20M6
		C24UM21, C24UM22, C24UM23, C24UM32, C24UM33, C24UM34, L24UM22, L24UM27, L27UM31, L24UM34, L24UM37, T24UM21, T24UM22, T24UM23	20UG6
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Television Receiver		
TUBES	VHF-Seventeen, UHF-Eighteen, Remote Control-Seven		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATINGS	(Less Remote Control) 195 Watts, 1.8 Amp. @ 117 Volts AC (With Remote Control) 225 Watts, 2.1 Amp. @ 117 Volts AC (While Tuning) 250 Watts, 2.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

FUSE

A fuse wire is used for filament protection. (For location, see M2 in photo "Chassis Bottom View".)

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up VHF Oscillator, remove rear cover. Insert alignment tool thru elongated hole in rear of tuner.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from the dynamic focus coil to various voltage points. (For location, see photo "Cabinet Rear View".)

SYNC STABILITY

Sync stability may be varied by means of a Super Range Finder control. (For location, see "Tube Placement Chart.")

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Lock adjustment. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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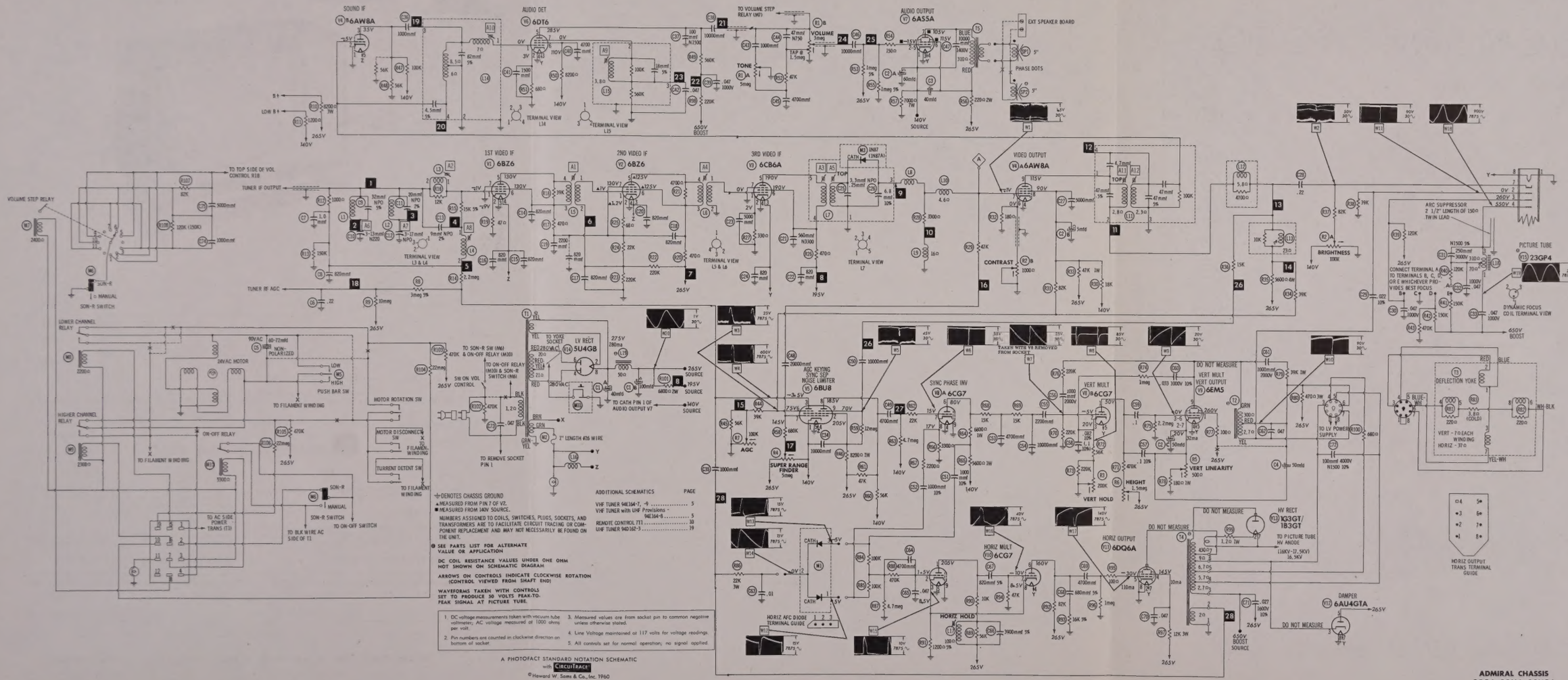
JA721

ADMIRAL CHASSIS
20G6, 20M6, 20UG6

SET 473 FOLDER 1


SOUND IF
V4 6AW8A
AUDIO DET
V6 6DT6
TO VOLUME STEP RELAY (M7)
AUDIO OUTPUT
V7 6AS5A
EXT SPEAKER BOARD
PHASE DOTS
VOLUME STEP RELAY
TO TOP SIDE OF VOL CONTROL R1B
TUNER IF OUTPUT
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 6BZ6
3RD VIDEO IF
V3 6CB6A
VIDEO OUTPUT
V8 6AW8A
TUNER RF AGC
SON-R SWITCH
LOWER CHANNEL RELAY
HIGHER CHANNEL RELAY
90VAC 60-72mfd NON-POLARIZED
36VAC MOTOR
PUSH BAR SW
LOW
HIGH
TO FILAMENT WINDING
MOTOR ROTATION SW
MOTOR DISCONNECT SW
TURRENT DETENT SW
ON-OFF RELAY
SON-R SWITCH
TO ON-OFF SWITCH
TO AC SIDE POWER TRANS (T3)
TO BLK WIRE AC SIDE OF T3
SW ON VOL CONTROL
TO SON-R SW (M6) & ON-OFF RELAY (M10) & SON-R SWITCH (M6)
TO ON-OFF RELAY (M10) & SON-R SWITCH (M6)
TO REMOVE SOCKET PIN 1
LV RECT
V14 5U4GB
TO YOKE SOCKET
TO CATH PIN 1 OF AUDIO OUTPUT V7
AGC KEYING SYNC SEP NOISE LIMITER
V5 6BU8
SYNC PHASE INV
V9 6CG7
VERT MULT
V8 6CG7
VERT MULT VERT OUTPUT
V9 6EM5
VERT LINEARITY
VERT HOLD
HEIGHT
BRIGHTNESS
CONTRAST
SUPER RANGE FINDER
AGC
HORIZ OUTPUT
V13 6DQ6A
HORIZ MULT
V10 6CG7
HORIZ HOLD
HORIZ AFC DIODE TERMINAL GUIDE
HV RECT
V12 1G3GT/1B3GT
TO PICTURE TUBE HV ANODE (16KV-17.5KV) 16.5KV
DAMPER
V11 6AU4GTA
DO NOT MEASURE
TO LV POWER SUPPLY
ARC SUPPRESSOR 2 1/2" LENGTH OF 150 TWIN LEAD
CONNECT TERMINAL A TO TERMINALS B, C, OR E WHICHEVER PROVIDES BEST FOCUS
PICTURE TUBE
V15 23GP4
DYNAMIC FOCUS COIL TERMINAL VIEW
DEFLECTION YOKE
VERT - 7Ω EACH WINDING
HORIZ - 37Ω
HORIZ OUTPUT TRANS TERMINAL GUIDE
TAKEN WITH V8 REMOVED FROM SOCKET
TERMINAL VIEW L3 & L4
TERMINAL VIEW L5
TERMINAL VIEW L7
TERMINAL VIEW L14
TERMINAL VIEW L15
TAP @ 1.5meg
TONE
VOLUME 3meg
140V SOURCE
265V SOURCE
195V SOURCE
650V BOOST
650V BOOST SOURCE
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 94E364-7, -9 5
VHF TUNER with UHF Provisions - 94E364-8 5
REMOTE CONTROL 7T1 10
UHF TUNER 94D162-3 19
⏚ DENOTES CHASSIS GROUND
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM 140V SOURCE.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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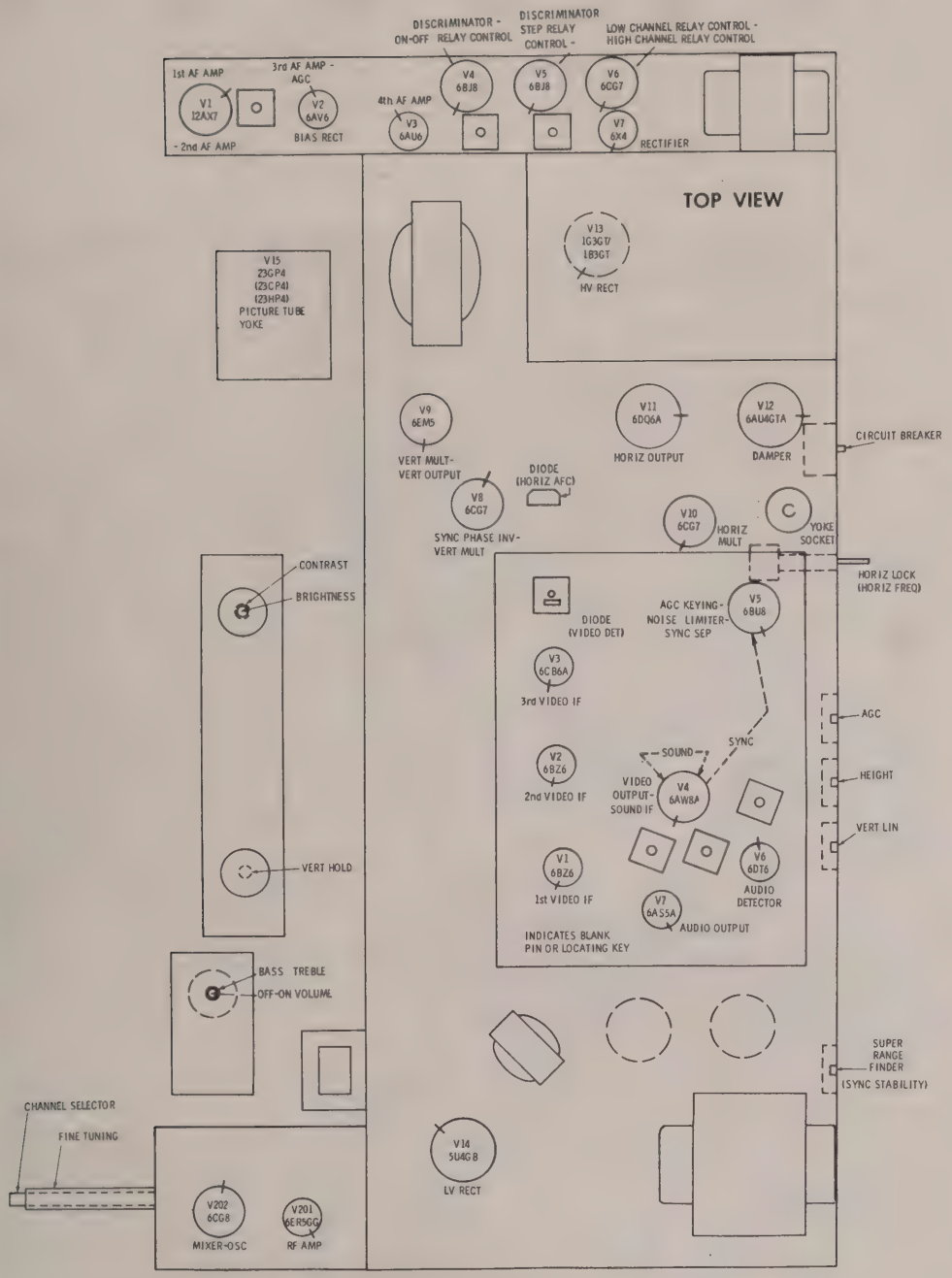
ADMIRAL CHASSIS 20G6, 20M6, 20UG6

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Wire), V14

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V15
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. AFC), V10

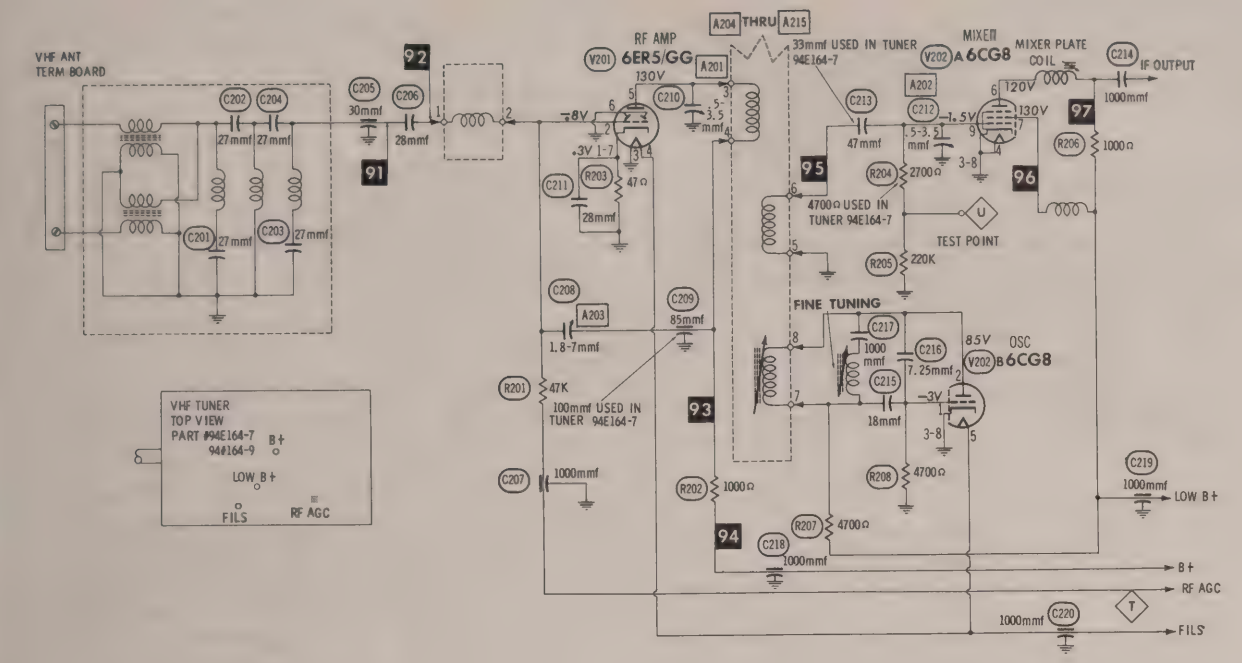
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

A Howard W. Sams CIRCUITRACE* Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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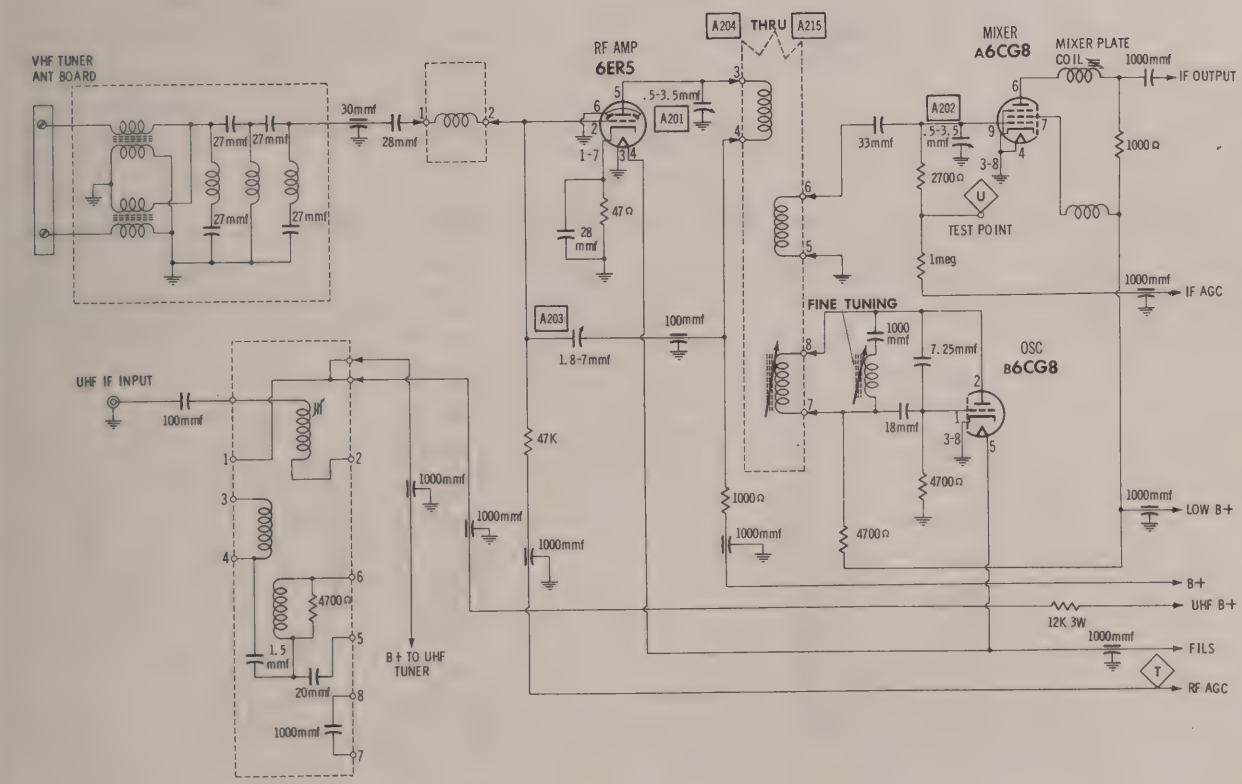
VHF TUNER 94E164-7, -9



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER with UHF Provisions 94E164-8

TUNER ALIGNMENT INSTRUCTIONS
94E164-7, -8, -9

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A204 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Turn Contrast fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. to point Ⓤ Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check to see that other channels have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

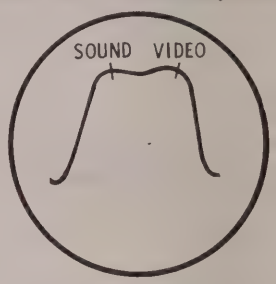


FIG. 201

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

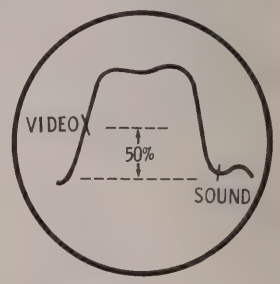


FIG. 202

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A5, A8 thru A12 .. GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

VIDEO IF ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202), Low side to chassis.	Not used	45.3MC (Unmod)	Any non-interfering channel	USE VTVM DC probe thru 47K to point (A). Common to chassis. (Across Video Det. load)	Mixer Plate Coil, & A1	Adjust for maximum deflection.
2.	"	"	43.5MC	"	"	A2, A3	"
3.	"	"	41.5MC	"	"	A4	"
4.	"	"	42.0MC	"	"	A5	"
5.	"	"	41.25MC	"	"	A6	Adjust for MINIMUM deflection.
6.	"	"	39.75MC	"	"	A7	"
7.	"	"	47.25MC	"	"	A8	"
8.	"	44.0MC (10MC Swp)	42.25MC 45.75MC	"	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. load)		Check for response similar to Fig. 1. If necessary, retouch A1 thru A5 and Mixer Plate Coil for desired response.

SOUND IF ALIGNMENT

Tune in a strong TV signal. Adjust controls for normal operation.
Turn A9 slowly clockwise until a buzz is heard in the sound, then counterclockwise for maximum undistorted sound. Reduce the signal strength at the antenna terminals (by use of an adjustable attenuator or disconnecting the antenna) until a strong hiss similar to super-regeneration is heard in the sound. Carefully adjust A10 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce signal until the hiss returns and retouch A10.
Carefully adjust A11 for MINIMUM 4.5MC beat interference in the picture. Carefully adjust A12 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce the signal and retouch A12.

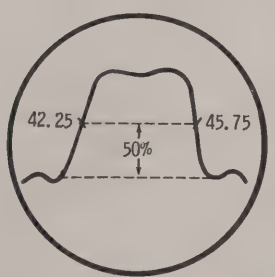
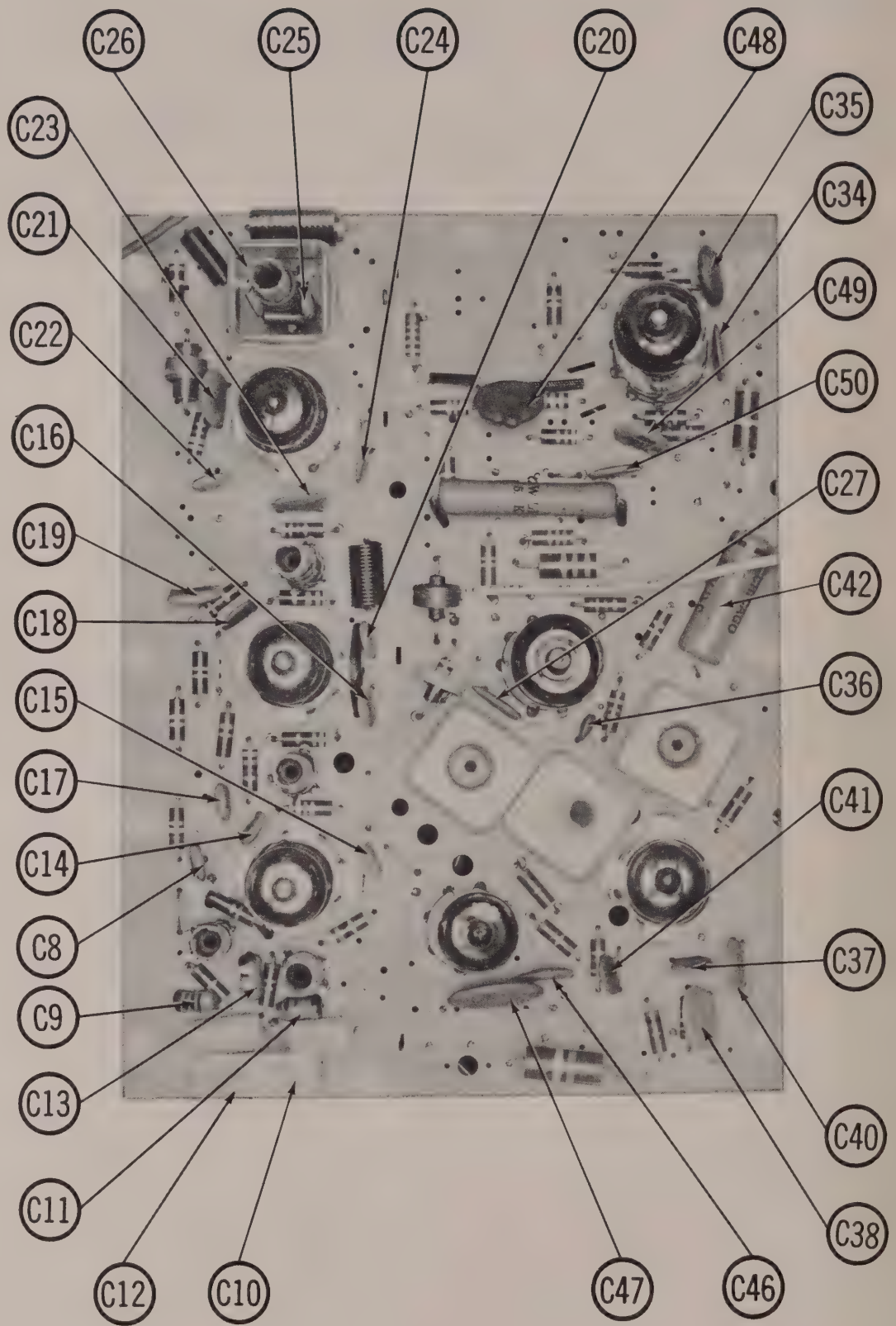
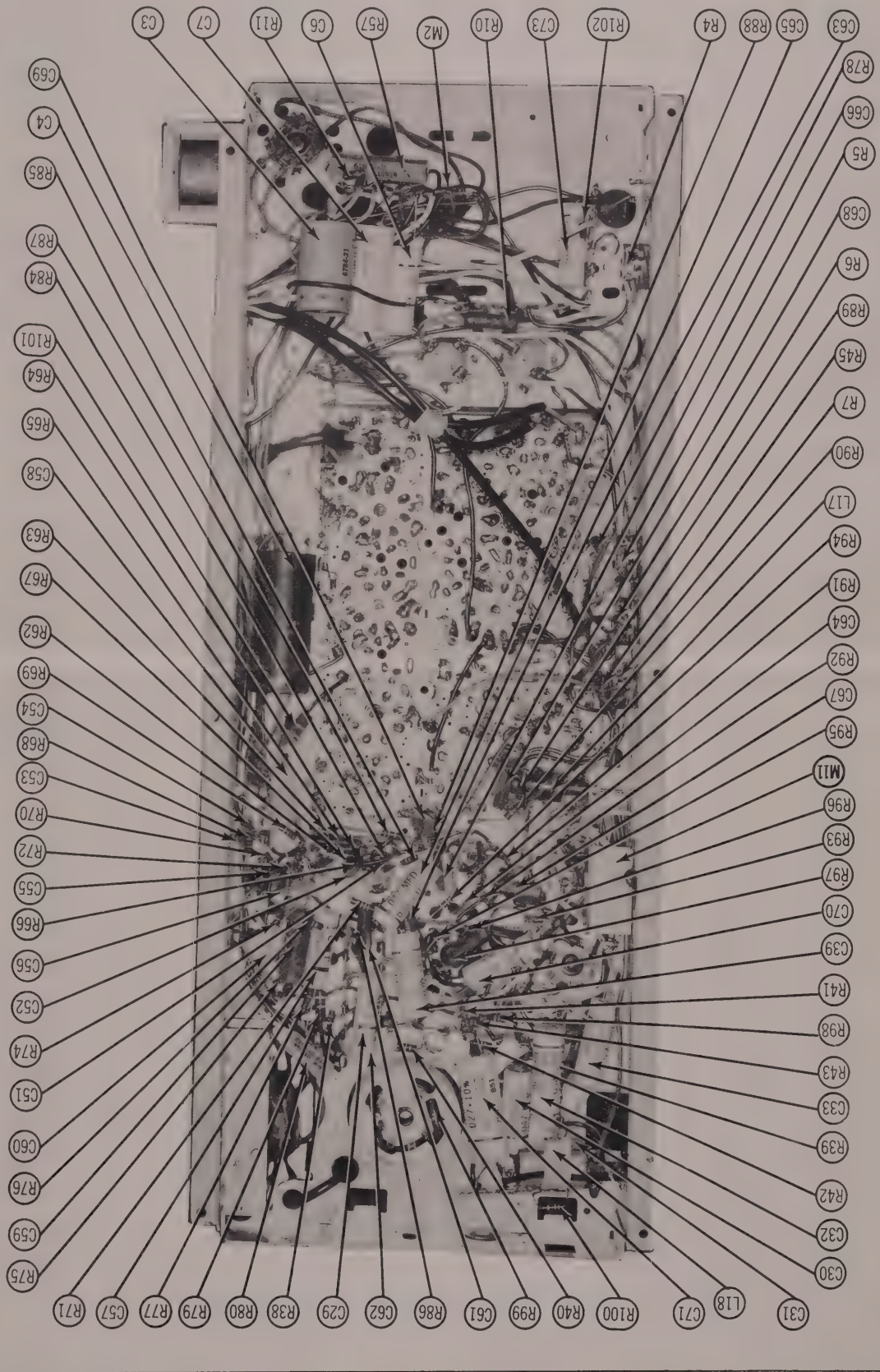


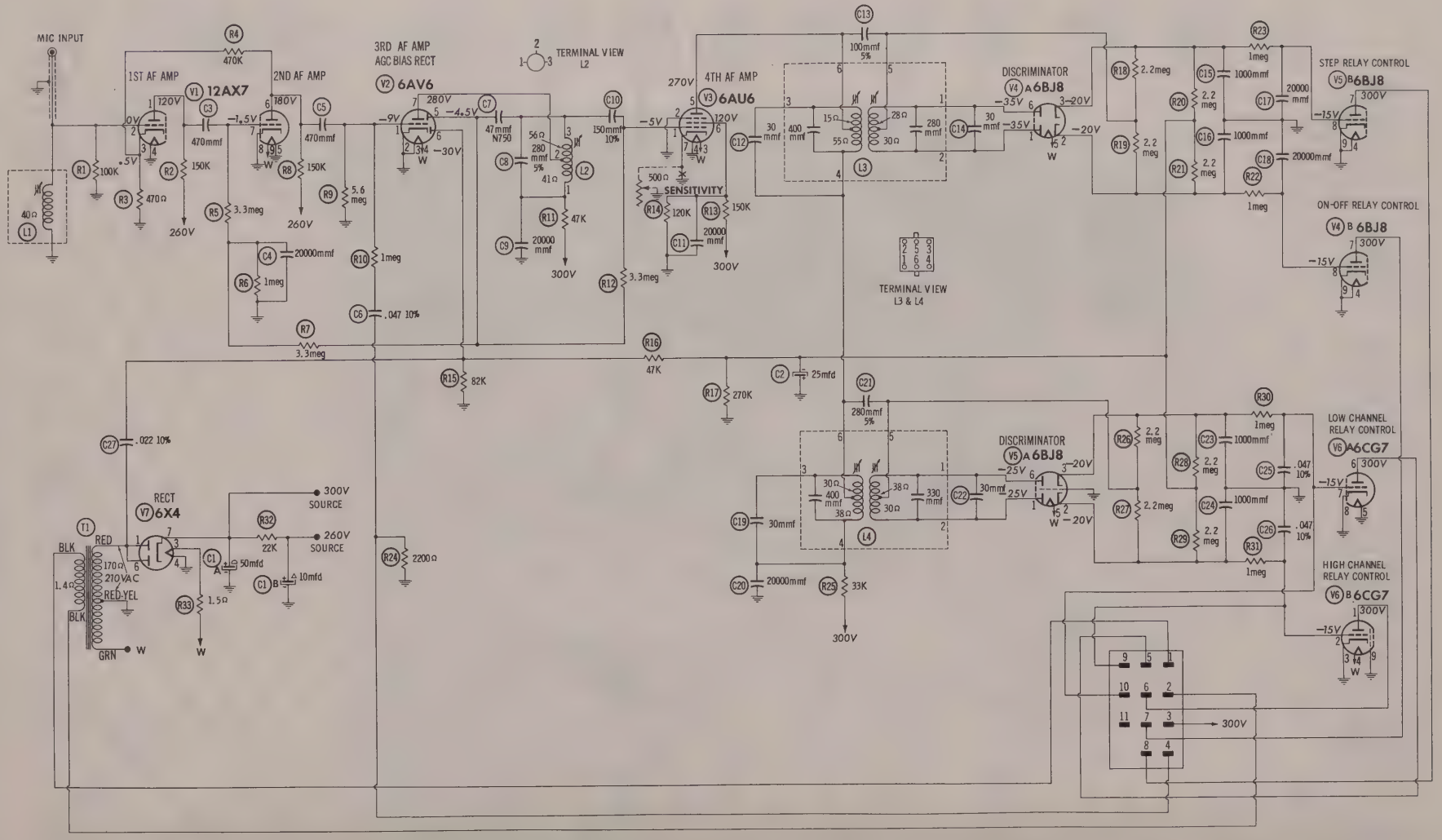
FIG.1



PRINTED BOARD - CAPACITOR IDENT.

CHASSIS BOTTOM VIEW





A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REMOTE CONTROL 7T1

PARTS LIST AND DESCRIPTIONS
REMOTE CONTROL

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	1st AF Amp.-2nd AF Amp.	12AX7
V2	3rd AF Amp.-AGC-Bias Rect.	6AV6
V3	4th AF Amp.	6AU6
V4	Discriminator-On/Off Relay Control	6BJ8
V5	Step Relay Control-Discriminator	6BJ8
V6	Low Channel Relay Control-High Channel Relay Control	6CG7
V7	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	300	67B4-49						
B	10	300							
C2	25	50	67B4-50 ①	SRE50V25	BBR25-50	TC36	TD-25-50	TVA-1713 TVA-1705 TVA-1306	

① Alternate Part #67B4-37.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	470		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C4	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C5	470		DI-470	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C6	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C7	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C8	280 5%		1469-00027	TCZ-270	5R5T27	CM-19B-271J	CNO-327	MS-327
C9	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C10	150 10%		DI-150	TCZ-150	22R5T15	CM-19B-151J	CNO-315	MS-315
C11	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C12	30		DI-30	DD-300	L10Q30	CCD-300	GP430	10TS-Q30
C13	100 5%		1469-0001	TCZ-100	22R5T1	CM-19B-101J	CNO-310	MS-310
C14	30		DI-30	DD-300	L10Q30	CCD-300	GP430	10TS-Q30
C15	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C17	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C18	20000		BPD-02	DD-203	BYA6S2	CCD-203	GP120	5HK-S20
C19	30		DI-30	DD-300	L10Q30	CCD-300	GP430	10TS-Q30
C20	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C21	280 5%		1469-00027	TCZ-270	5R5T27	CM-19B-271J	CNO-327	MS-327
C22	30		DI-30	DD-300	L10Q27	CCD-300	GP430	10TS-Q30
C23	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C24	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C25	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C26	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473	GEM-1615	2TM-S47
C27	.022 600V 10%		V84C6S22-10%		PM6S22	6DP-2-223	GEM-1612	6TM-S22

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	100K	
R2	150K	
R3	470Ω	
R4	470K	
R5	3.3meg	
R6	1meg	
R7	3.3meg	
R8	150K	
R9	5.6meg	
R10	1meg	
R11	47K	
R12	3.3meg	
R13	150K	
R14	120K	
R15	82K	
R16	47K	
R17	270K	
R18	2.2meg	
R19	2.2meg	
R20	2.2meg	
R21	2.2meg	
R22	1meg	
R23	1meg	
R24	2200Ω	
R25	33K	
R26	2.2meg	
R27	2.2meg	
R28	2.2meg	
R29	2.2meg	
R30	1meg	
R31	1meg	
R32	22K	
R33	1.5Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	1st Amp. Input Coil	69C230-2						
L2	40KC Interstage Coil	72B192-5						
L3	Discriminator	69C231-6						
L4	Discriminator	69C231-7						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .3A	210V @ .002A tap @ 6.3V @ 3.5A		80C70-1						

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	CBS • GENERAL ELECTRIC • USE	TYPE	ITEM No.	RAYTHEON • SYLVANIA • USE	TYPE
V1	1st Video IF Amp	6BZ6	V8	Sync Phase Inv - Vert. Mult	6CG7
V2	2nd Video IF Amp.	6BZ6	V9	Vert. Mult. -Vert. Output	6F8G
V3	3rd Video IF Amp.	6CB6A	V10	Horiz. Mult.	6CG7
V4	Video Output-Sound IF Amp	6AW8A	V11	Horiz. Output	6DQ6A
V5	AGC Keying-Noise Limiter-Sync Sep.	6BU8	V13	Damper	6AU4GTA
V6	Audio Detector	6DT6	V13	HV Rect.	1G3GT/1B3GT
V7	Audio Output	6AS6A	V14	LV Rect.	5U4GB

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	23GP4 23CP4 23HP4		23CP4 ①		23CP4 ②	① Aluminized ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	350	67D18-323	AFH3-64-25	BO483	FP247	TMT-164	TVL-2538	
B	100	350							
C2A	80	300	67D18-320	AFH4-46-10	DO676	FP448.11	TMQ-181	TVLS-3468*	
B	65	200							
C	450	50							
C3	40	200	67B4-21	PRS1580	BR4025	TC58	TD-40-250	TVA-1511	
C4	50	350	67D15-236	AFH-41	A0390	FP137	TMS-46	TVL-1632	
C5	80-72	90VAC	67A41-1		ETB-70-2			AM-1108	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-3022	2TM-P22
C7	1.0 100V		P288N-1.0		CUB2W1		GEM-31	2TM-M1
C8	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C9	32 NPO 2%			TCZ-33	C10Q33C	CM-15-E-330G		
C10	3-13 N220	#66A38-7						
C11	30 NPO 2%			TCZ-30	C10Q3C			
C12	3-17 NPO	#66A38-11						
C13	9 NPO 2%			TCZ-10	C10V9C			
C14	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C15	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C16	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C17	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C18	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C19	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	10TS-T82
C20	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	5HK-D22
C21	560 N3300	#65D6-131						
C22	820		DI-821	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C23	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C24	820		DI-820	DD-821	BYA10T82	CCD-821	GP382	10TS-T82
C25	3.3 NPO .25mmf		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-333	10TCC-V33
C26	5.6 10%		NPO-SI 6.8	DTZ-5R6	C10V58C	CCTO-5R6	CNO-568	10TCC-V58
C27	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C28	.22 400V		P488N-22		CUB4P22	4DP-4-224	GEM-4022	4TM-P22
C29	.022 600V 10%		Y84C6S22-10%		PM6S22	6DP-3-223	GEM-1612	6TM-S22
C30	.047 1000V		P1088N-047	DD-503	CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C31	250 3000V NI500 5%							
C32	.047 1000V		P1088N-047	DD-503	CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C33	.047 1000V		P1088N-047	DD-503	CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	1000		BPD-001	DD-103	BYA10D1	CCD-103	GP210	5HK-D10
C36	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C37	100 N500			TCL-100				
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	.047 1000V		P1088N-047	DD-503	CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C40	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C41	1500		BPD-0015	DD-152	BYA10D15	CCD-152	GP215	5HK-D15
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	100		BPD-001	DD-101	BYA10Z1	CCD-101	GP210	5HK-D10
C44	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C45	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C47	10000 1400V		DAC-27	DD30-103	HVD16S1	16DP-3-103	UAC-110	BL-S10
C48	20000		BPD-02	DD-203	BYA20S1	CCD-203	GP120	5HK-S20
C49	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C50	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C51	1000 10%		DI-1000	DD-102	1S51	CCD-102	GP210	10TS-D10
C52	1000 10%		DI-1000	DD-102	1S51N	CCD-102	GP210	10TS-D10
C53	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C54	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C55	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C56	1000 2000V		HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	30GA-D10
C57	.1 400V 10%		Y84C4P1-10%		PM4P1	4DP-3-104		4TM-P1
C58	.082 300V 10% (.1mfd 200V 10%) **		Y84C4S2-10%			4DP-4-833		2W7-S82
C59	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C60	.033 1000V 10%		P1084CM-033			10DP-4-333	GEM-1613	10TM-S33
C61	1000 2000V		HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	30GA-D10
C62	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C63	.01 600V		P688N-01	DE-103	CUB6S	6DP-3-103	GEM-611	6TM-S
C64	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C65	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C66	1900 5%		1464-0019		1R5D39	CM-20B-192J	MCJ462.5	MS-339
C67	820 5%		1469-00082		1R5T83	CM-20B-82J	MCE281	MS-382
C68	680 5%		1469-00068		1R5T68	CM-20B-68J	MCJ249	MS-368
C69	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C70	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C71	.027 1600V 10%					16DP-4-303	GEM-1613	
C72	100 4000V NI500 10%	#65DK0-212						

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C73	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C74	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C75	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
** Alternate value. # Admiral Part Number.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg		75C45-1		RTV-692			Tone
B	3meg							Volume
	1 Smeg tap							
C	Switch							Push-Pull Off-On
R2A	100K		75B17-35	FI-31	RTV-691	QJ-1136	UE4078	Brightness
B	1000Ω			R2-5			*	Contrast
R3A	200K		75D13-106	AB-46	A47-200K-S	QU-129	U43	Vert. Hold
B	Shaft			AK-6	R5-5/8	NQ	D6-37	
R4A	5meg		75D30-119	AB-87	B47-5meg-S	BU-141	PTA5L	Super Range Finder
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R5A	500Ω		75D30-100	AB-4	B47-500-S	BU-103	PTA5L	Vert. Lin.
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R6A	1.5meg		75D30-104	AB-742	B47-1.5meg-S	BU-138	PTA155L	Height
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R7A	100K		75D30-118	AB-36	B47-100K-S	BU7-126	PTA15L	AGC
B	Shaft			AK-19	Not Req.	TM4	Not Req.	

† "Concentrikit" Equivalent: K-2 Kit with Base Elements & Shafts: BU-128, PI-109 (Panel) BU7-108, RI-126 (Rear)
* "STA-LOC" Equivalent: FA15L, RU15R, OS312, 1S813.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	3meg 5%	
R9	10meg	
R10	8200Ω 3W	
R11	1200Ω	
R12	1000Ω	
R13	150K	
R14	2.2meg	
R15	15K 5%	
R16	18K	
R17	470Ω	
R18	39K	
R19	47Ω	
R20	470Ω	
R21	4700Ω	
R22	330K	
R23	220K	
R24	22K	
R25	68Ω	
R26	470Ω	
R27	330Ω	
R28	3300Ω	
R29	47K	
R30	18K	
R31	82K	
R32	180Ω	
R33	47K 1W	
R34	39K	
R35	5600Ω 4W	#61B24-443
R36	15K	
R37	82K	
R38	39K	
R39	120K	
R40	120K	
R41	150K	

ITEM No.	RATING	REMARKS
R42	150K	
R43	470K	
R44	39K	
R45	56K	
R46	8200Ω 1W	#61A1-45
R47	100K	
R48	56K	
R49	560K	
R50	8200Ω	
R51	680Ω	
R52	47K	
R53	1meg 5%	
R54	150Ω	
R55	1meg 5%	
R56	2200 2W	
R57	7000Ω 7W	
R58	680K	
R59	12meg	#60B7-163
R60	56K	
R61	47K	
R62	22K	
R63	4.7meg	#61B24-351
R64	6.8K	
R65	3600Ω 1W	#60B28-64
R66	3300Ω	
R67	2200Ω	
R68	15K	
R69	15K	
R70	220K	
R71	470K	
R72	56K	
R73	220K	
R74	1meg	
R75	2.2meg	

ITEM No.	RATING	REMARKS
R76	220K	
R77	100Ω	
R78	180Ω 1W	
R79	39K 1W	
R80	470Ω 3W	#61A1-45
R81	220Ω	
R82	220Ω	
R83	3.8Ω (Cold)	#61A37
R84	100K	
R85	100K	
R86	22K 3W	#61B34-357
R87	4.7meg	
R88	470K	
R89	56K	
R90	10K	
R91	1800Ω 5%	
R92	82K	
R93	39K 5%	#60B7-163
R94	47K	
R95	100Ω	
R96	1meg	
R97	12K 3W	#61B34-351
R98	220K	
R99	1.2Ω 1W	#60B28-64
R100	680Ω	
R101	6800Ω 2W	
R102	470 K	
R103	470K	
R104	22meg	
R105	470K	
R106	22meg	
R107	82K	
R108	120K	(150K) *

Admiral Part No. * Alternate value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Gromer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	41.25MC Trap	T83B7-4						
L2	39.75MC Trap Coil	T83B7-5						
L3	1st Video IF	T82C132-43						
L4	47.25MC Trap	T82C132-44						
L5	2nd Video IF	T82C132-39						
L6	3rd Video IF	T82C132-39						
L7	4th Video IF	T82B16-3						①
L8	RF Choke	T83B1-4						
L9	Shunt Peaking Coil	T83B5-20	19-3500	19-3500	TY-302	6174	VP-8	500uh
L10	RF Choke	T83B1-3						28uh
L11A	Sound Take-Off	T82B16-2						
B	4.5MC Trap	T83B5-30						②
L12	Series Peaking Coil	T83C5-33						②
L13	Shunt Peaking Coil	T83B5-26						②
L14A	Sound IF	T82C108-1						
B	Phase Shift Coil							
L15	Quadrature Coil	T82C132-37						
L16	Fil. Choke	T83B7-2	19-1001	19-1001	BC-562	4604		1.4uh

① Includes C25, C26 and M3. ② Wound on 4700Ω resistor. ③ Wound on 10K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L17	100Ω		94C17-7	HS-5 *	TY-163 *	6210 *	H-102 *	HS-5 *	Horiz. Stab. * Enlarge mtg. hole

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	Dynamic Focus Coil	94B17-1								

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(♪)	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L19	.280A	50Ω	1 Hy	74B18-27 ①	26C93 ②	F-801 ②	C-2236 ②	26C93 ②	C-34X	

① Part #74B18-26 used in Ch. 20UG6. ② Drill new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	SEC. 1	SEC. 2	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⏚ 2.1A	580VCT ② .280A	5V ③ 3A	80D65-3 ①						
	SEC. 3	SEC. 4	SEC. 5							
	24V ⏚ 1.2A tap ⏚ 6.3V ⏚ 9A									

① Part #80D65-14 used in Ch. 20G6, 20UG6.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No	Halldorson PART No	Merit PART No.	Ram PART No	Rogers PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Output	79C43-19	26S14		V319			26S14	A-140X
	Alt. Vert. Output	79B43-19	26S14		V319			26S14	A-140X
	Alt Vert Output	79B43-18							
T3	Yoke-Horiz. (19MH) (110°)-Vert. (13.5MH)	94D172-1 ①	Y-52 ② ③		Y-110 ② ③ ④		DY-37A ② ③ ④	Y-52 ② ③	Y-60 & NW-23 & YC-110 ⑤
	Rear Cover & Centering Device	94C153-1							
T4	Horiz. Output	79E77-7							D-151R *
	Alt. Horiz. Output	79D77-7							
	Alt. Horiz. Output	79D77-23							

① Includes plug. Does not include rear cover and centering device.
② Requires new rear cover and centering device.
③④ Connect same as original.
⑤ Use original yoke network, if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5							4 & 5
6							6
7							7
8							7
3							8
2							2
1							1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	5600Ω	3-4Ω	79B81-8	24S81	A-2930	AU-601	A-3877	24S81	S-3X

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	5"	PM	6-8Ω	78B139-12 ①	5AIZ6.4	① Parallel and phase.
SP2	5"	PM	6-8Ω	78B139-12 ①*	5AIZ6.4	* Not used in some versions.

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: ADMIRAL PART No.	INTERNATIONAL PART No.	ITT PART No	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1		93B5-4 ①	1T1 ②	K1616 ①			① Selenium Dual Diode ② Selenium Diode (Two Required)

ADMIRAL CHASSIS 20G6, 20M6, 20UG6

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ADMIRAL PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	1"	Length #26 Wire						

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3	1N87 1N87A *		1N295	1N295	1N295	Video Detector (Pigtail) * Alternate

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	Tuner	94E164-9	VHF, Ch. 20M6
	Tuner	94E164-7	VHF, Ch. 20G6
	Tuner	94E164-8	VHF with UHF Provisions, Ch. 20UG6
	Tuner	94D162-3	UHF
M5	Switch	77B99-1	Push Bar
M6	Switch	77A82-1	Remote-Manual
M7	Relay	83B29-1	Volume Step
M8	Relay	83B27-1	Channel Selector
M9	Relay	83B27-1	Channel Selector
M10	Relay	83B31-1	Off-On
M11	Circuit Breaker	84A17-2	
	Microphone	78B159-1	Includes Cable

CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TV

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	165K	47Ω	0Ω	.1Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	6BZ6	▲ 22K	▲ 68Ω	.1Ω	0Ω	†470Ω	†470Ω	140K		
V3	6CB6	.2Ω	330Ω	.1Ω	0Ω	†7300Ω	†7300Ω	0Ω		
V4	6AW8A	0Ω	100K	■ 45K	0Ω	.1Ω	●70Ω	3300Ω	■15K	†5600Ω
V5	6BU8	■ 0Ω	†8200Ω	2.3meg	0Ω	.1Ω	†27K	●†800K	†30K	†12meg
V6	6DT6	17Ω	680Ω	.1Ω	0Ω	†780K	■ 8200Ω	560K		
V7	6AS5A	¶	500K	0Ω	.1Ω	500K	†220Ω	†530Ω		
V8	6CG7	●†1.8meg	220K	● 110K	0Ω	.1Ω	■ 12K	■ 4.7meg	3300Ω	0Ω
V9	6EM5	†100Ω	● 470Ω	2.2meg	0Ω	.1Ω	2.2meg	● 470Ω	NC	†770Ω
V10	6CG7	†10K	1.3meg	1200Ω	.1Ω	0Ω	†82K	47K	1200Ω	0Ω
V11	6DQ6A	NC	0Ω	TP	†12K	1meg	TP	.1Ω	0Ω	TOP CAP †9Ω
V12	6AU4GTA	NC	NC	¶900K	NC	†0Ω	NC	.1Ω	0Ω	
V13	1G3GT/ 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †439Ω
V14	5U4GB	NC	¶N	NC	21Ω	NC	20Ω	NC	¶	
V15	23GP4	0Ω	39K	†120K	†270K	NC	NC	●140K	.1Ω	
V201	6ER5/ GG	47Ω	3.8meg	0Ω	.1Ω	■ †9200Ω	0Ω	47Ω		
V202	6CG8	4700Ω	■ 5900Ω	0Ω	0Ω	.1Ω	■ 2200Ω	■ 1200Ω	0Ω	
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM 265V SOURCE.
■ MEASURED FROM 140V SOURCE.
‡ MEASURED FROM PIN 3 OV V12.

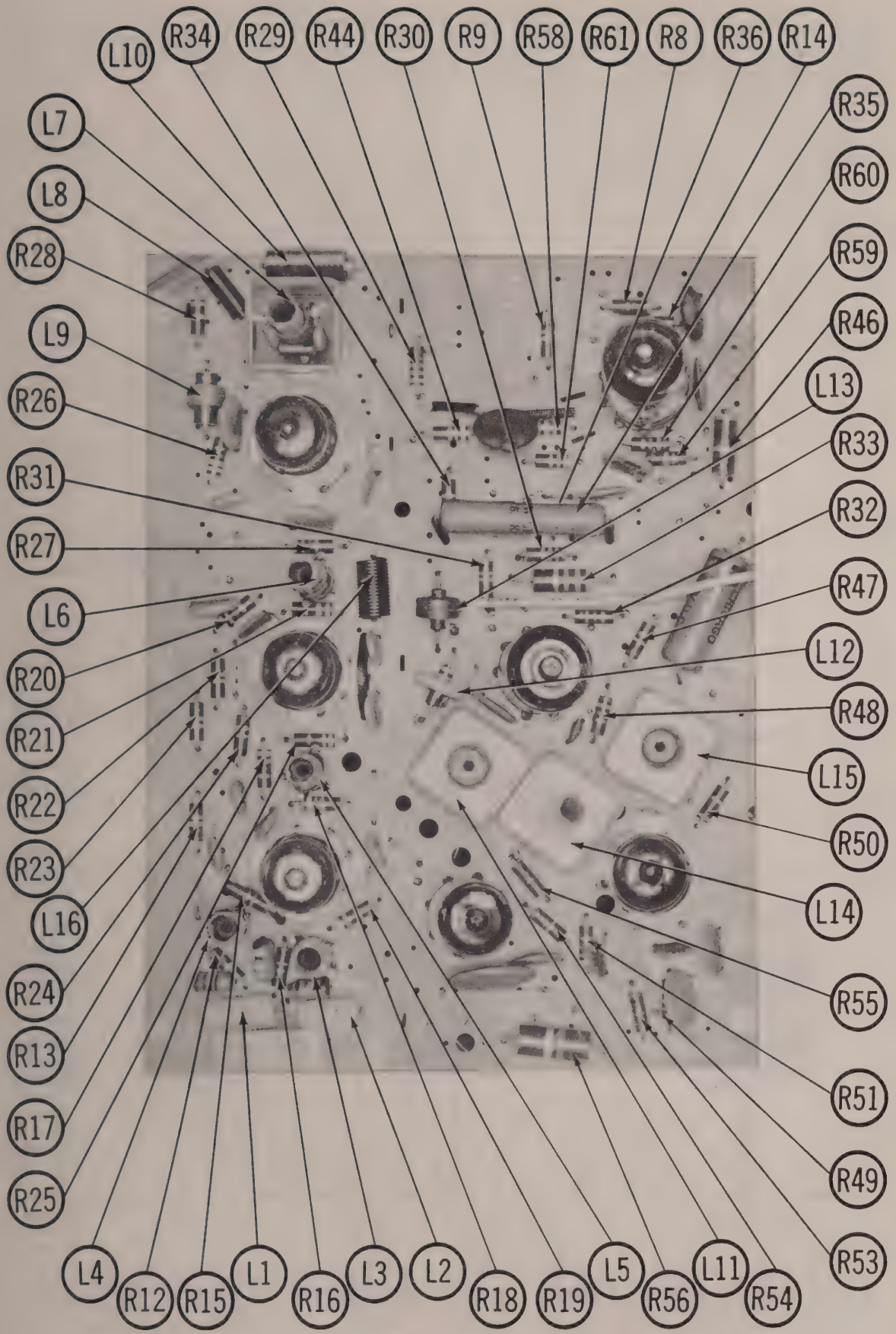
NC NO CONNECTION.
TP TIE POINT.

REMOTE CONTROL

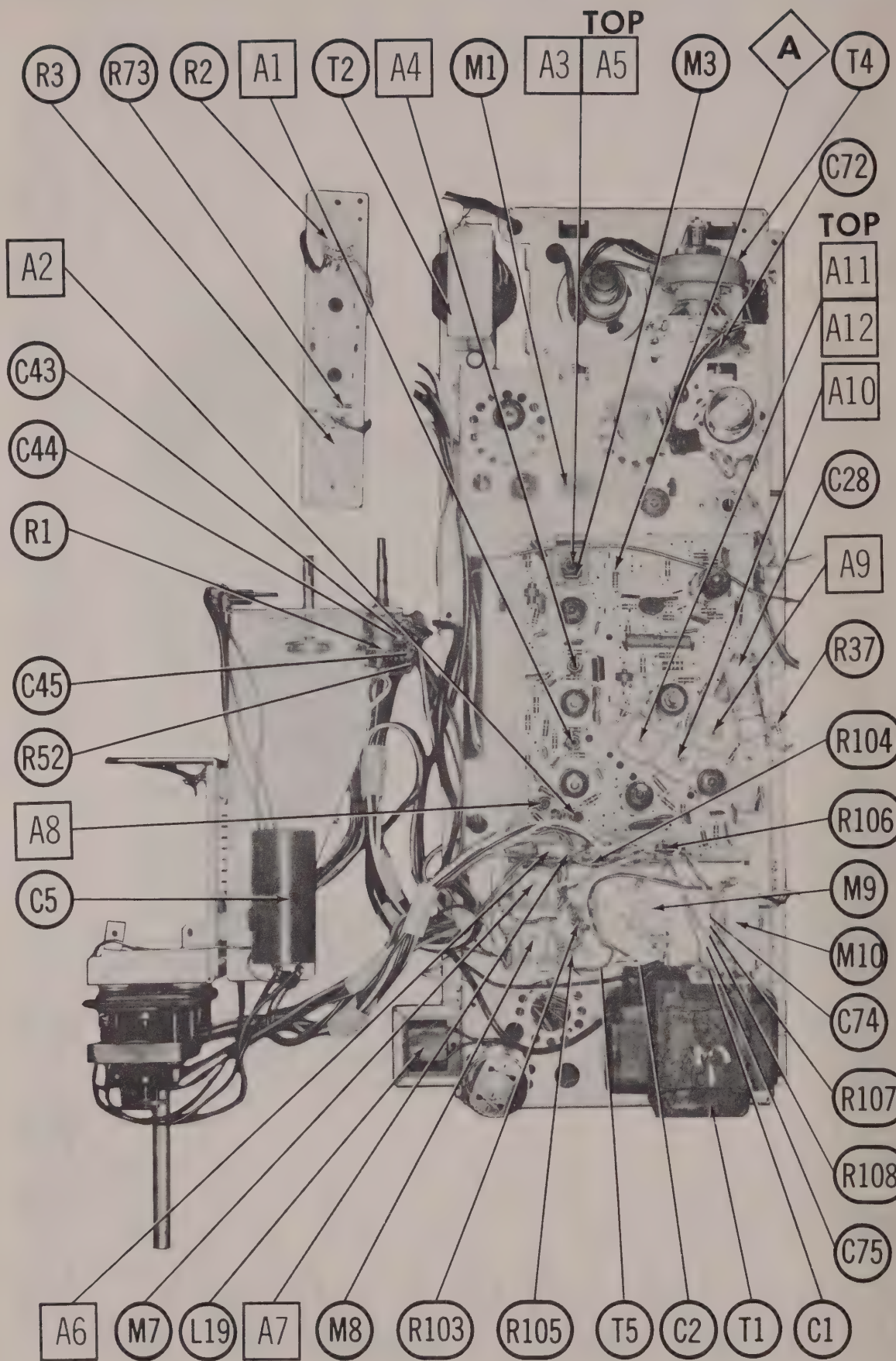
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†170K	40Ω	470Ω	0Ω	0Ω	†170K	4.3meg	0Ω	.2Ω
V2	6AV6	5.6meg	0Ω	0Ω	.2Ω	4.3meg	60K	†47K		
V3	6AU6	7.6meg	0Ω	.2Ω	0Ω	†33K	†135K	0Ω		
V4	6BJ8	2.4meg	1.9meg	1.9meg	0Ω	.2Ω	2.4meg	†5300Ω	2.9meg	0Ω
V5	6BJ8	2.4meg	1.9meg	1.9meg	0Ω	.2Ω	2.4meg	†2400Ω	2.9meg	0Ω
V6	6CG7	†2300Ω	2.5meg	0Ω	.2Ω	0Ω	†2200Ω	2.5meg	0Ω	0Ω
V7	6X4	170Ω	NC	.8Ω	0Ω	TP	170Ω	¶		

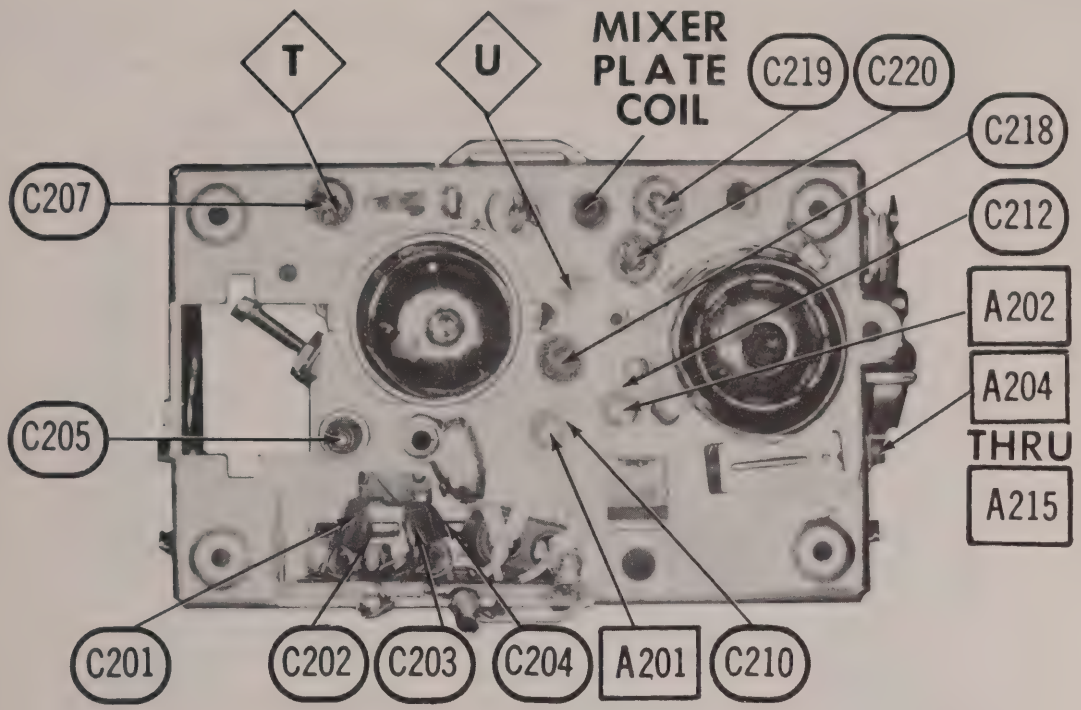
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM 300V SOURCE.
NC NO CONNECTION.
TP TIE POINT.



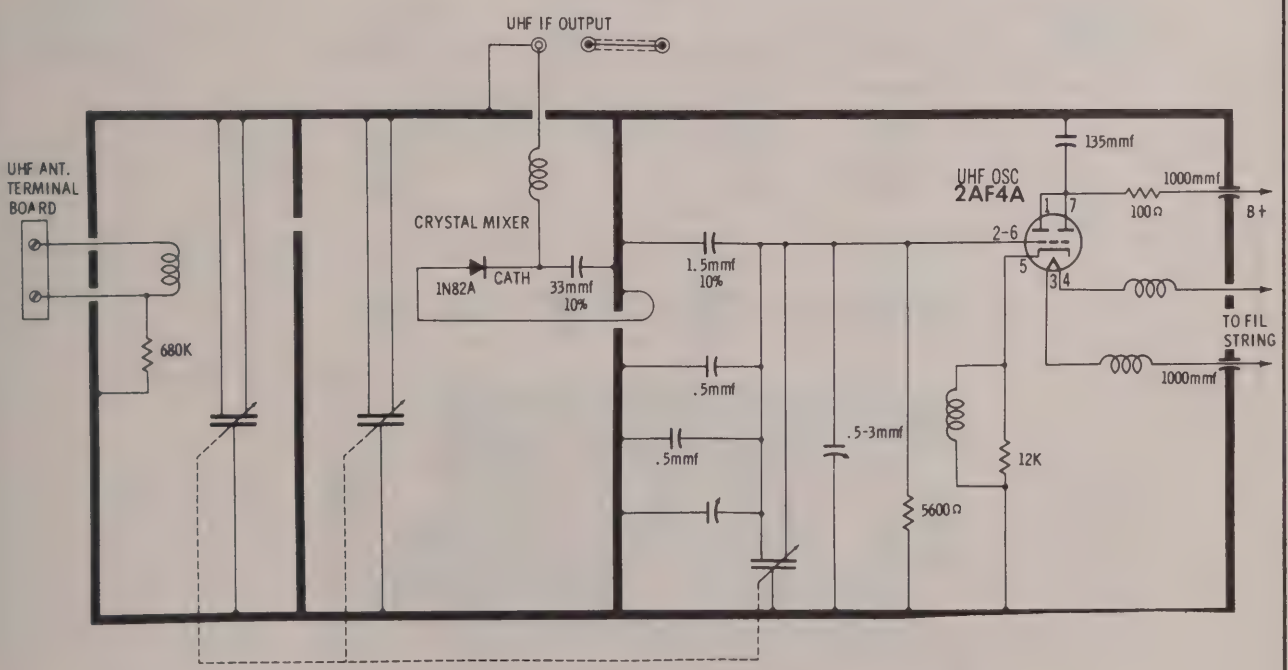
PRINTED BOARD - RESISTOR & INDUCTOR IDENT.



CHASSIS TOP VIEW



TUNER 94E164-9 TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER 94D162-3

TUNER PARTS LIST AND DESCRIPTIONS

94E164-7,-9

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V201	RF Amplifier	6ER5/GG
V202	Mixer-Oscillator	6CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27		DI-27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C202	27		DI-27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C203	27		DI-27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C204	27		DI-27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C205	30							
C206	28		DI-27	TCZ-27	C10Q27C	CCTO-270		10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7			829-7				
C209	85							
C210	.5-3.5							
C211	28		DI-27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C212	.5-3.5							
C213	47		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C214	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C215	18		DI-18	TCZ-18	C10Q18C	CCTO-180	CNO-418	10TCC-Q18
C216	7.25				C10V7C	LI0V7		10TS-V75
C217	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	47Ω	

ITEM No.	RATING	REMARKS
R204	2700Ω	(4700Ω) *
R205	220K	
R206	1000Ω	

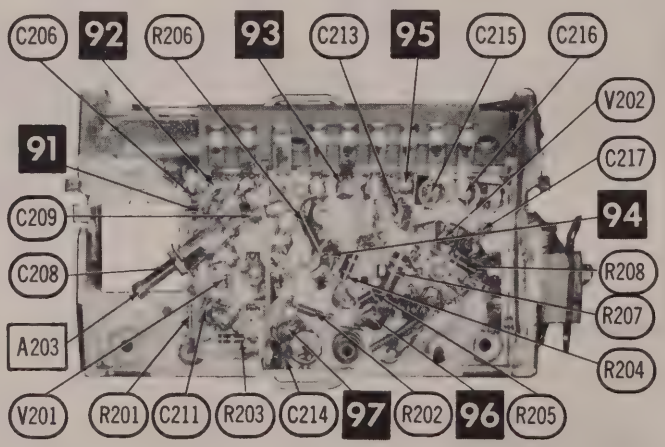
ITEM No.	RATING	REMARKS
R207	4700Ω	
R208	4700Ω	

* Alternate value.

COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201A	Ant., RF, Mixer Grid & Osc. Coils	94D164-52	Channel 2
B	"	94D164-53	Channel 3
C	"	94D164-54	Channel 4
D	"	94D164-55	Channel 5
E	"	94D164-56	Channel 6
F	"	94D164-57	Channel 7

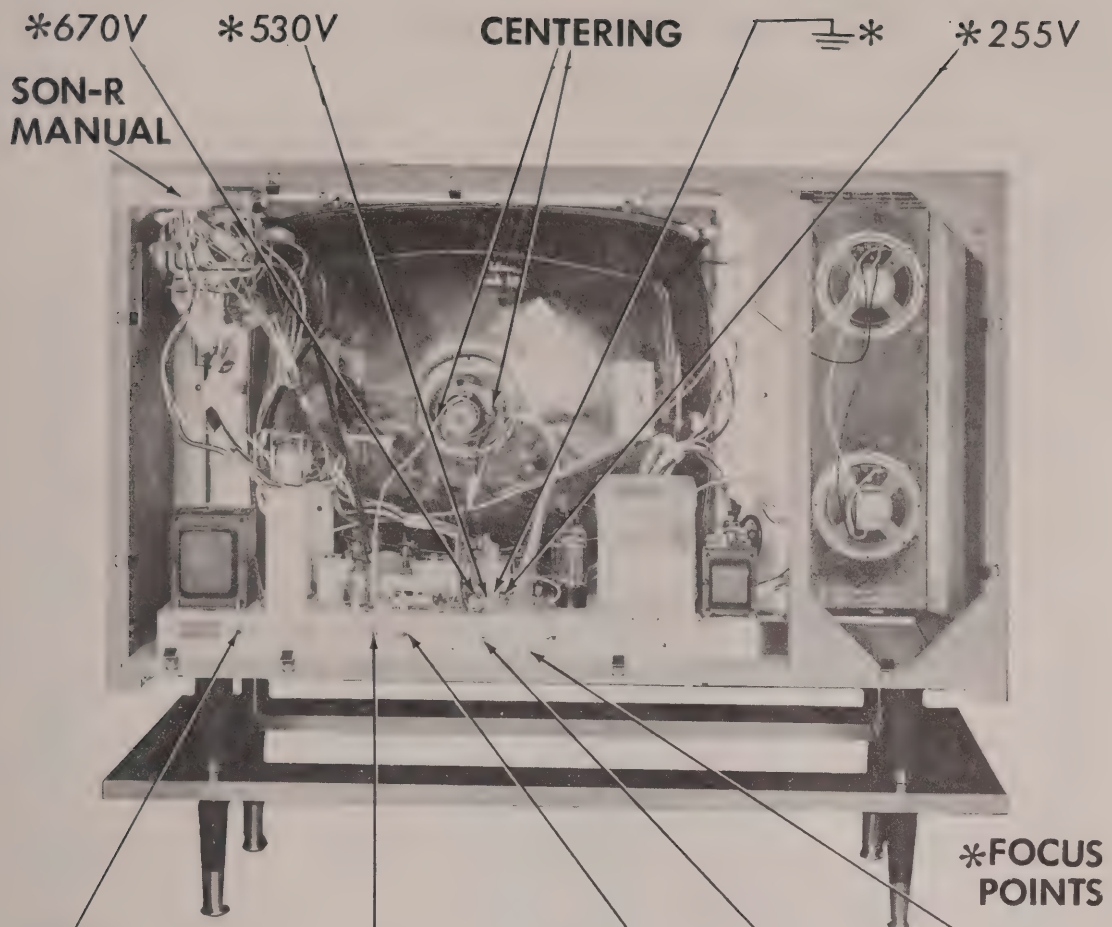
ITEM No.	USE	ADMIRAL PART No.	NOTES
L207G	Ant., RF Mixer Grid & Osc. Coils	94D164-58	Channel 8
H	"	94D164-59	Channel 9
I	"	94D164-60	Channel 10
J	"	94D164-61	Channel 11
K	"	94D164-62	Channel 12
L	"	94D164-63	Channel 13



A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER 94E164-9-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Lock clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Lock slowly counterclockwise until the picture just falls into sync.

DISASSEMBLY INSTRUCTIONS

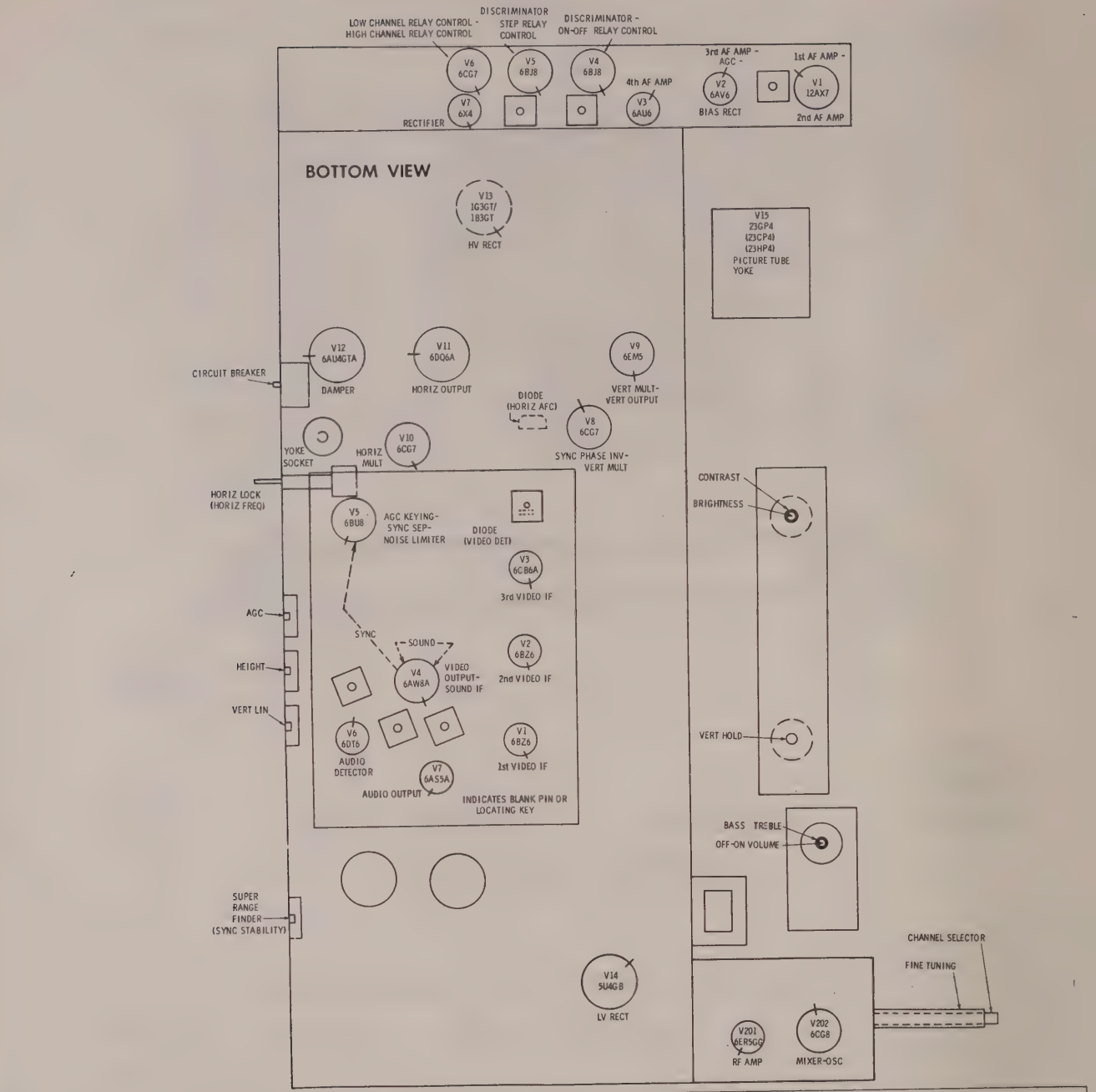
CHASSIS REMOVAL

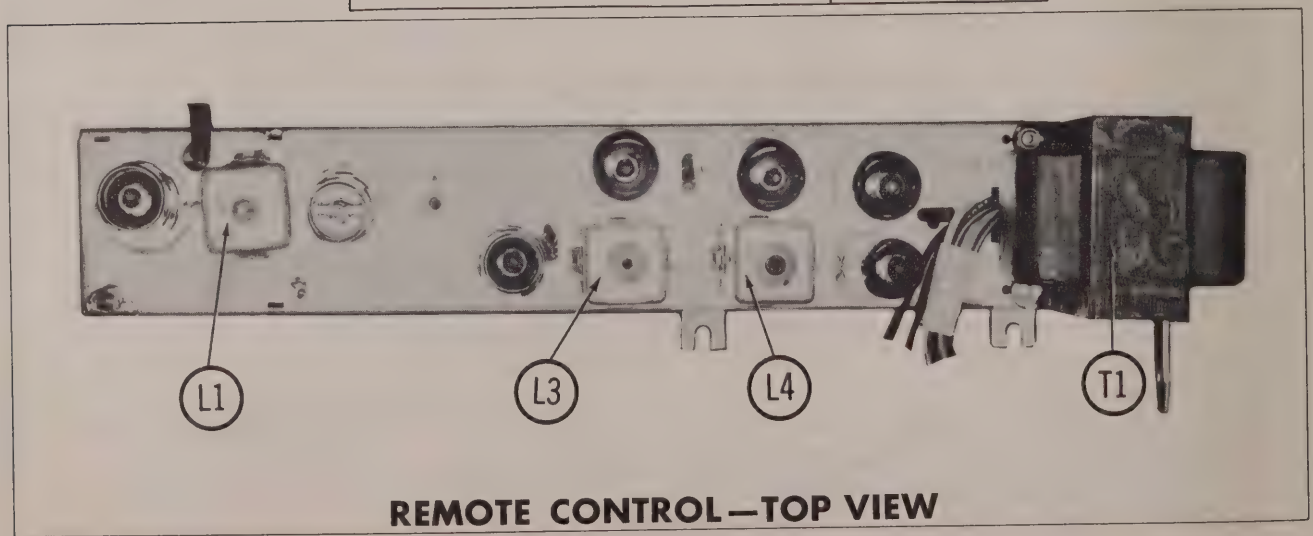
1. Remove rear cover by depressing 11 spring clips.
2. Remove antenna and speaker leads.
3. Remove Son-R manual switch.
4. Remove 3 chassis bolts from bottom of cabinet.
5. Remove 4 bolts holding front escutcheon to cabinet.
6. Remove chassis by sliding out front.

PICTURE TUBE REMOVAL

1. Remove chassis.
2. Remove 6 push-on type knobs from front of cabinet.
3. Lay chassis face down on a clean soft material.
4. Remove yoke plug, HV lead, picture tube socket, dial lamps and microphone connection.
5. Remove 4 metal screws holding control bracket.
6. Remove 4 metal screws holding tuner mounting bracket, and control bracket. Remove brackets.
7. Remove 1 metal screw at rear of chassis and loosen 2 underneath chassis holding Remote Control chassis.
8. Remove remote plug and remove chassis.
9. Remove 6 chassis bolts.
10. Remove chassis.
11. Loosen bolt on picture tube retaining wire.
12. Remove 4 metal screws holding picture tube support mounts.
13. Remove picture tube.

TUBE PLACEMENT CHART



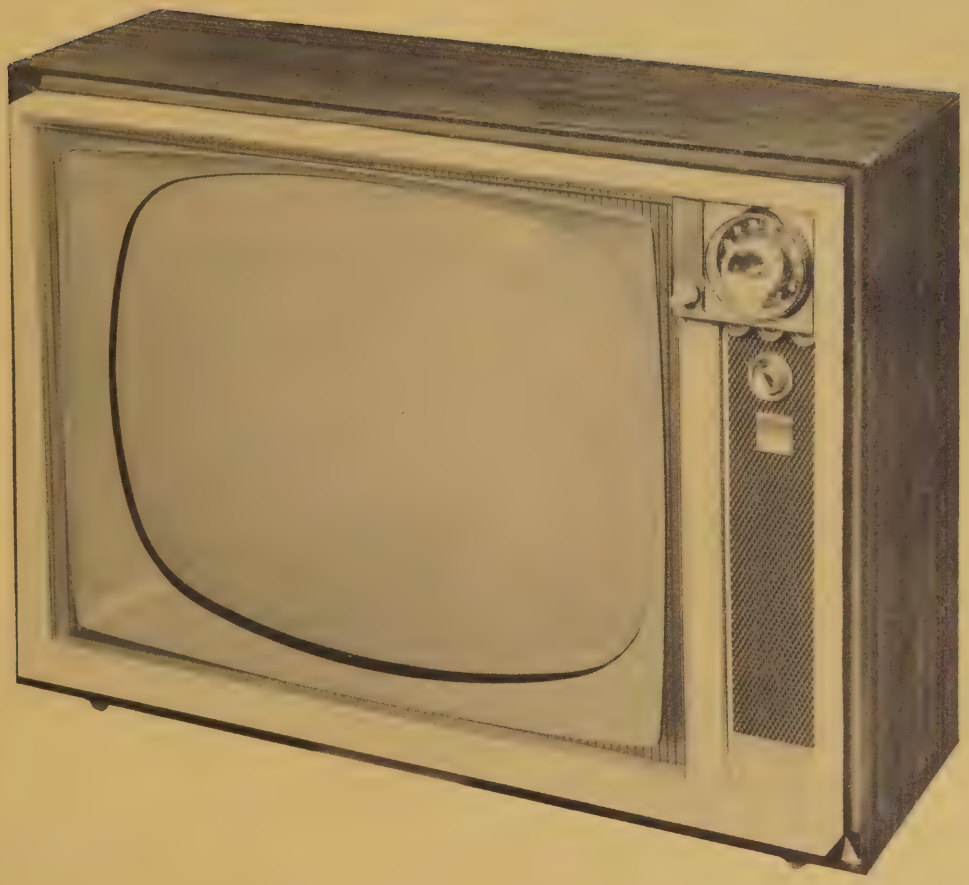


REMOTE CONTROL—TOP VIEW

REMOTE CONTROL - BOTTOM VIEW

PHOTOFACT® Folder with CIRCUITRACE®

CORONADO MODELS TV2-9570A,
-9572, -9575, -9577



MODEL TV2-9570A

CORONADO MODELS TV2-9570A,
-9572, -9575, -9577

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 473 FOLDER 2

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 11 wood screws holding rear cover. Remove the rear cover.
2. Remove 7 push-on type knobs from front of cabinet. Remove escutcheon around channel selector shaft by pulling straight out. Remove 1 push-on type station indicator.
3. Remove speaker leads, antenna leads and unclip the pilot lamp.
4. Remove 4 wood screws, 2 on each side, holding picture tube mounting bracket at the top.
5. Remove 1 tuner mounting bracket screw at upper left rear of cabinet.
6. Remove 4 chassis bolts holding chassis to metal guides at bottom of cabinet.
7. Remove chassis.

MODEL TV2-9570A

TRADE NAME	Coronado MODELS TV2-9570A, TV2-9572, TV2-9575, TV2-9577
SUPPLIER	Gamble-Skogmo, Inc. 15 North 8th Street, Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	VHF-Seventeen, UHF-Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 175 Watts, 1.85 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

FUSE DEVICE

A 4.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

The AGC may be varied by means of a Range control. (For location, see "Tube Placement Chart".)

FOCUS

No provision is made to vary the focus on this receiver.

SYNC STABILITY

Sync stability may be varied by means of a Sync Stabilizer control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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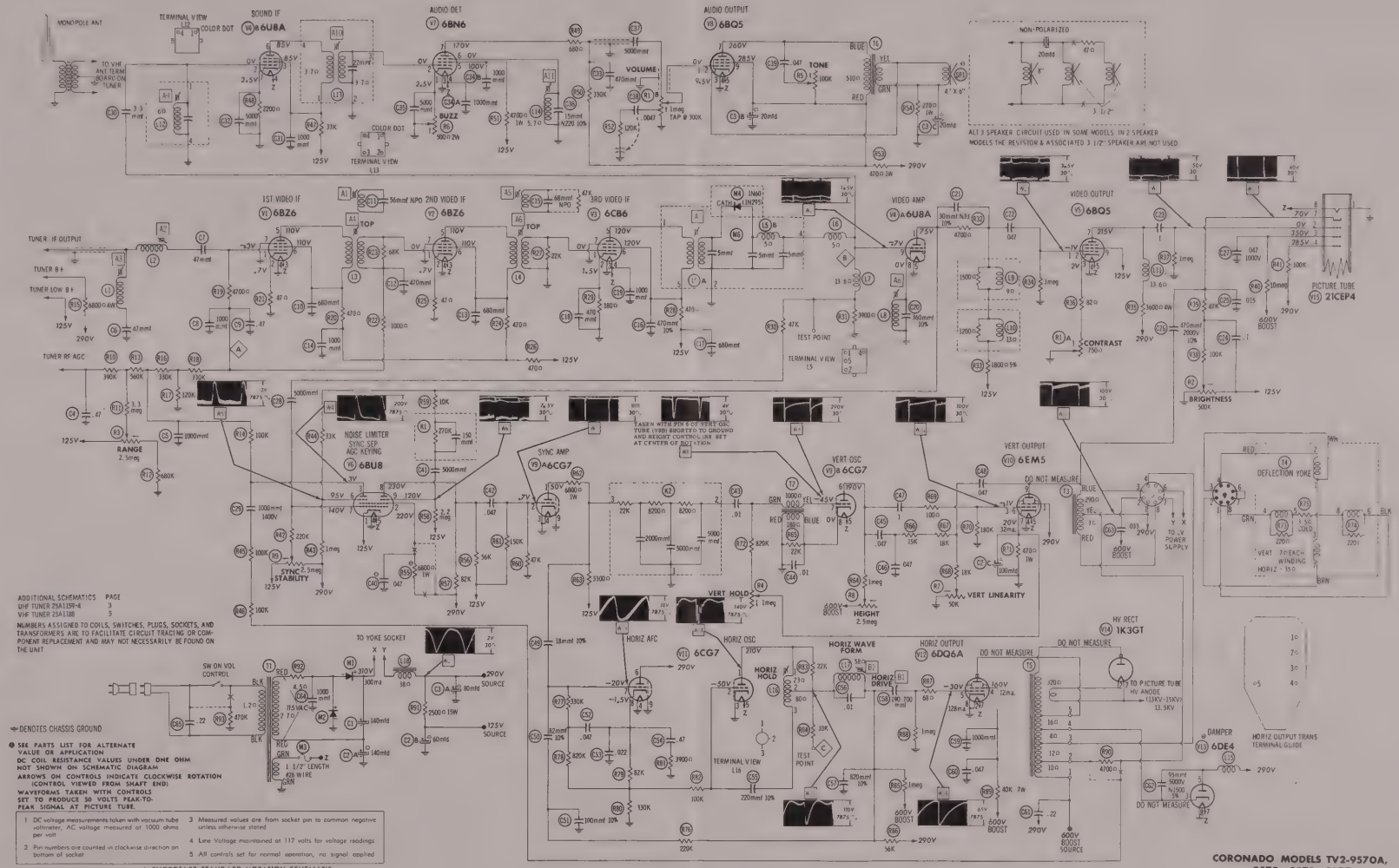
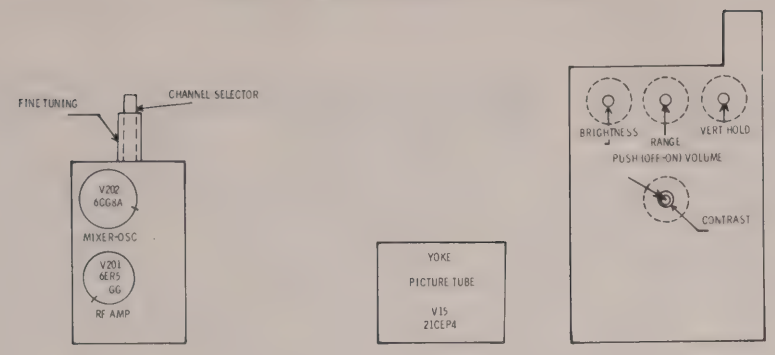
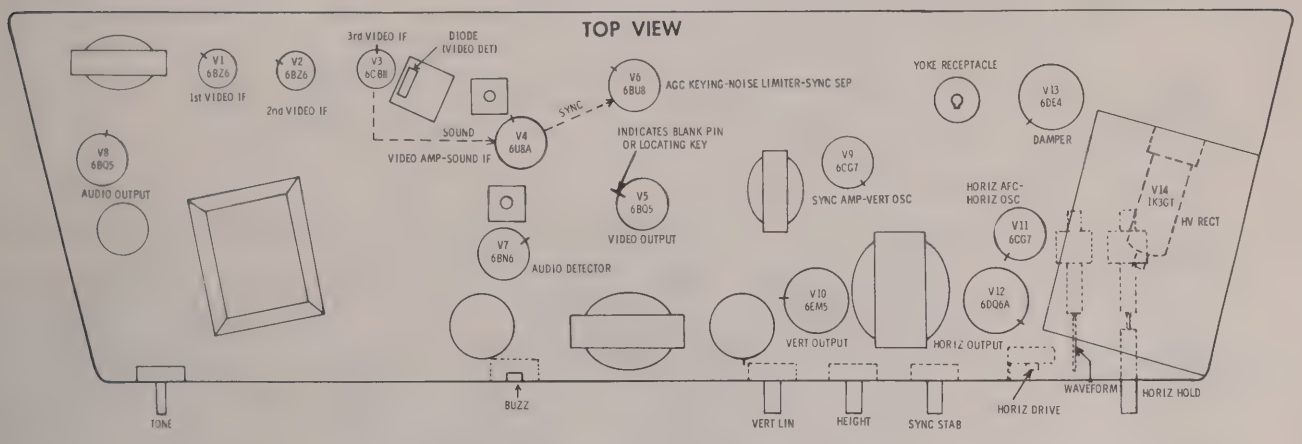
CORONADO MODELS TV2-9570A, -9572, -9575, -9577

SET 473 FOLDER 2


CORONADO MODELS TV2-9570A, -9572, -9575, -9577
ADDITIONAL SCHEMATICS PAGE
UHF TUNER 25A1159-4 3
VHF TUNER 25A1188 5
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1960
CORONADO MODELS TV2-9570A, -9572, -9575, -9577

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

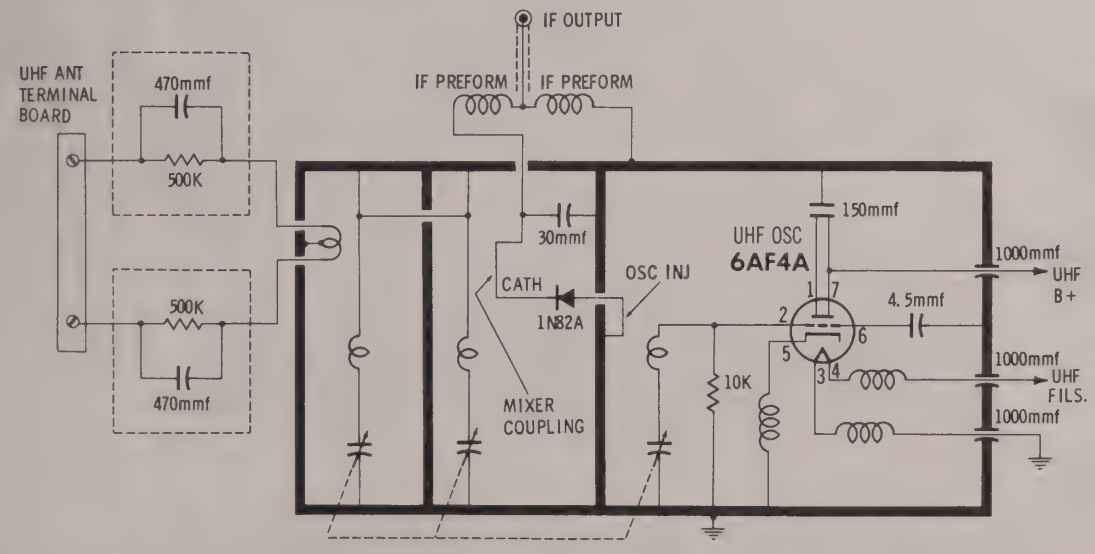
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rect. (B+)

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V15
No vertical deflection V9, V10
Poor vert. linearity or foldover V9, V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, Rect. (B+)
Vert. off freq. V9
Horiz. off freq. V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V5, V15
Has pic, no sound V4, V7, V8
Overloaded picture V6

SYNC FAILURE
No vert. sync V6, V9
No horiz. sync V6, V9
No vert. or horiz. sync V6, V9



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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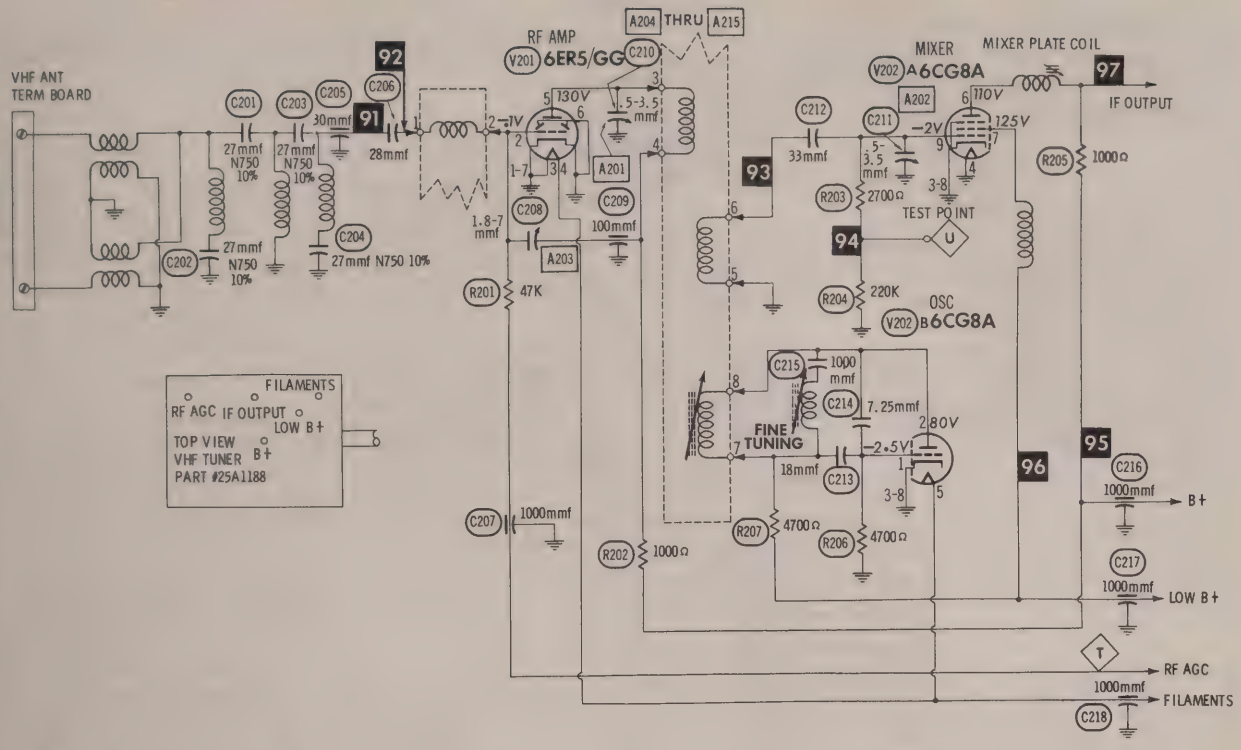
UHF TUNER 25A1159-4

SET 473 FOLDER 2

CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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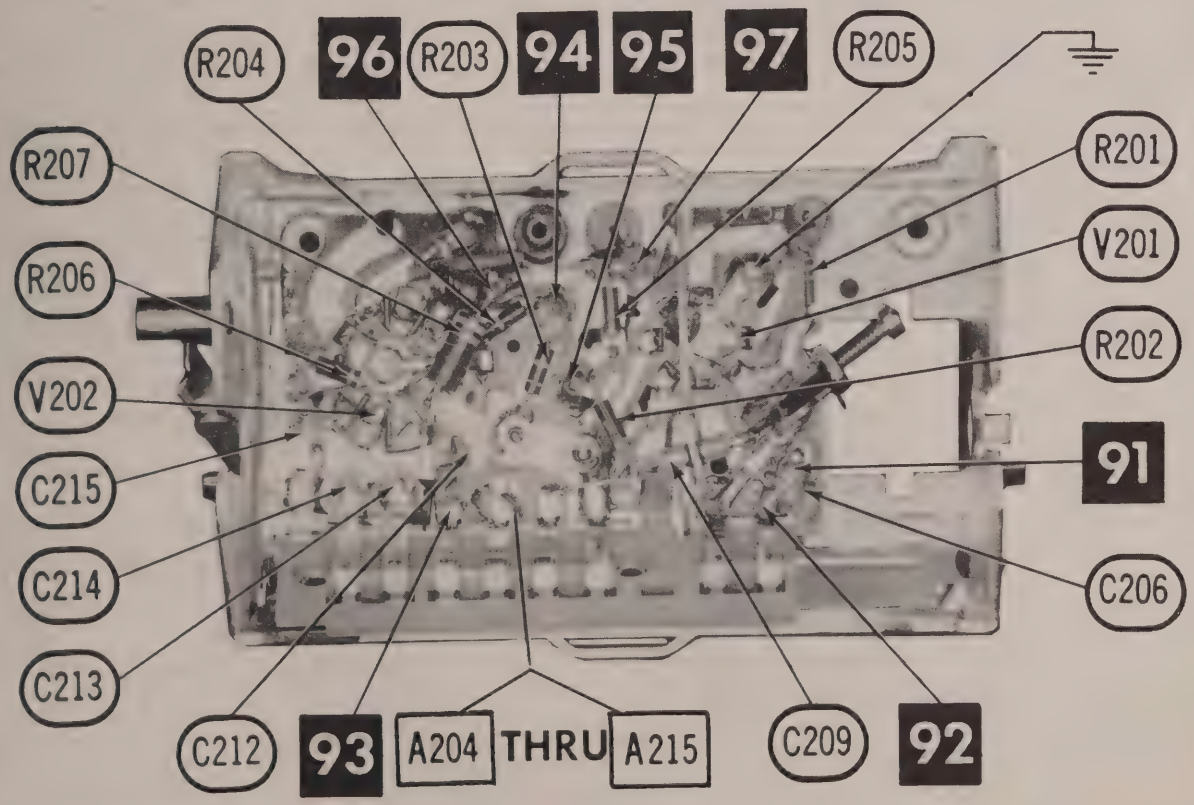
VHF TUNER 25A1188



A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER 25A1188 - BOTTOM VIEW

TUNER ALIGNMENT INSTRUCTIONS

25A1188

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A203 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A204 thru A215 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓣ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Turn Contrast fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. to point Ⓤ Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check to see that other channels have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

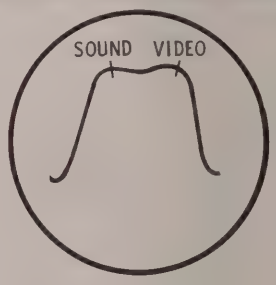


FIG. 201

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across Video Det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

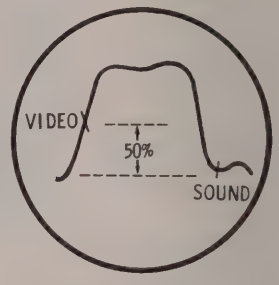


FIG. 202

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: General Cement #8282, 8606, 8606L or 9295
Walsco #2543, 2544 or 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru demodulator probe (Fig. 1) to pin 5 (plate) of 6BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer Plate Coil and A2 affect the shape of the top. A3 is adjusted to position the 41.25MC marker. This adjustment must be made correctly or the sound rejection will not be correct. The 45.75MC marker must be exactly on peak.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across Video Det. load)	A4	Increase bias at point A to 4.5 volts. Adjust sweep output for -2 volts DC at point Ⓑ. Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top. A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching). CAUTION : The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set Contrast fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 6U8 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals, by use of an attenuator or similar device, until a hiss similar to super-regeneration is heard in the sound.
Adjust A9, A10 and A11 for maximum undistorted sound.
Adjust the Buzz control for MINIMUM buzz.

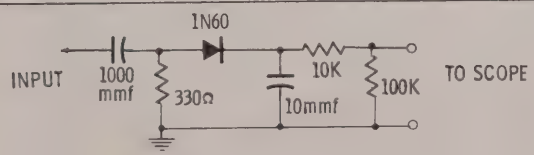


FIG. 1

FIG. 2

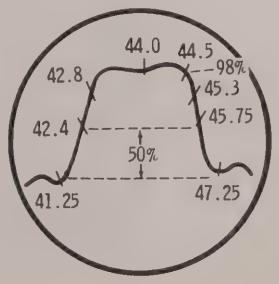


FIG. 3

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	USE	TYPE				
	• CBS •	GENERAL ELECTRIC •		RAYTHEON •	SYLVANIA •	
V1	1st Video IF Amp.	6BZ6	V8	Audio Output	6BQ5	
V2	2nd Video IF Amp.	6BZ6	V9	Sync Amp-Vert. Osc.	6CG7	
V3	3rd Video IF Amp.	6CB6	V10	Vert. Output	6EM5	
V4	Video Amp.-Sound IF	6U8A	V11	Horiz. AFC-Horiz. Osc.	6CG7	
V5	Video Output	6BQ5	V12	Horiz. Output	6DQ6A	
V6	AGC Keying-Sync Sep-Noise Limiter	6BU8	V13	Damper	6DE4 *	
V7	Audio Detector	6BN6	V14	HV Rect.	1K3GT	

* Alternate 6DA4, recommended replacement 6DE4.

PICTURE TUBE

ITEM No	REPLACEMENT DATA					NOTES
	CORONADO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V15	21CEP4	21CTP4 ①	21CEP4 ①	21CEP4/ 21CEP4A	21CEP4/ 21CEP4A ②	① Aluminized ② "Silver Screen 86"

ELECTROLYTIC CAPACITORS

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	150	45X431	AFH5H-23	XA0261	FP117	TM5-24	TVL-1428	
C2A	140	150	45X464					TVL-3639	
B	60	350						TVA-1422	
C	100	50							
C3A	80	350	45X465					TVL-3633	
B	20	350						TVA-1305.5	
C	20	50							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.47 200V		P388N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C5	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-D10
C6	47		SI 47	D5-470	L10Q47	CCD-470	GP447	10T5-Q47
C7	47		SI 47	D5-470	L10Q47	CCD-470	GP447	10T8-Q47
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-D10
C9	.47 200V		P388N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C10	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10T8-T68
C11	56 NPO			TC2-56	C10Q56C	CCTO-560	CNO-456	10TCC-Q56
C12	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10T8-T47
C13	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10T8-T68
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-D10
C15	68 NPO		NPO-DI 68	DT2-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
C16	470 10%		DI-470	DT-471	5RST47	CCD-471	GP347	10T8-T47
C17	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP368	10T8-T68
C18	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10T8-T47
C19	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-D10
C20	360 10%		1469-00036	DD-361	22RST36	CM-20B-361K		MS-336
C21	30 N33 10%	#47X279						
C22	.047 400V		P488N-047	DD-503	CUB4S47	4DP-5-473	GEM-4147	4TM-S47
C23	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C24	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C25	.015 600V		P688N-015	DD68-153	CUB6S15	6DP-2-153	GEM-6115	6TM-S15
C26	470 2000V 10%	#47X771				VCM-35-471K		
C27	.047 1000V		P1088N-047	DD-503	CUB10S47	10DP-5-473	GEM-10147	10TM-S47
C28	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C29	1000 1400V		HVD-15-1000	DD30-102	HVB20D1	3CCD-102	UAC-210	BL-D10
C30	3.3		NPO-SI 3.3	TC2-3R3	C1V33C	CCTO-3R3	CNO-533	10TCC-V33
C31	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-.10
C32	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C33	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10T5-T47
C34A	1000		BPD-2K001	DD3-102	BYD6DD1	CCD-102	B3X310	5HK-2D10
B	1000					CCD-102		
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C36	15 N220 10%	#47X672						10TCR-Q15
C37	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C38	.0047 400V		P488N-0047	D5-472	CUB4D47	4DP-1-472	GEM-6247	6TM-D47
C39	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C40	.047 400V	Note 1	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C44	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C48	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C49	18 10%		1469-00018	DD-180	22RSQ18	CM-20B-180K	CNO-418	MS-418
C50	82 10%		1469-000082	DD-820	22RSQ82	CM-20B-820K	CNO-482	MS-482
C51	100 10%		1469-0001	DD-101	22RST1	CM-20B-100K	MCB235	MS-310
C52	.047 200V		P288N-047	DD-503	CUB2S47	2DP-3-473	GEM-4147	2TM-S47
C53	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-2122	2TM-S22
C54	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C55	220 10%		1469-00022	DD-221	22RST23	CM-20B-221K	CNO-322	MS-322
C56	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C57	820 10%		1469-00082	DD-821	1RST82	CM-20B-821K	MCB251	MS-382
C58	180-700	#17A276				30D		
C59	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-D10
C60	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C61	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C62	95 5000V N1500 5%	#47X769						
C63	.033 600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C64	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP310	5HK-D10
C65	.22 400V		P488N-22		CUB4P1	4DP-5-224	GEM-4022	4TM-P22

Coronado Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	78X32		RTV-649		UE134-S	Contrast
B	1meg	½			Not Req.			Volume
	300K Tap							
C	Switch				Not Req.			Push-Push Off-On
R2A	500K	½	40X447	AB-59	A47-500K-S	QU1-133	U60	Brightness
B	Shaft			AK-8	RS-3/16	NQ	D6-37	
R3A	2.5meg	½	40X448	AB-83	B47-2.5meg-S	QU1-239	U255	Range
B	Shaft			AK-8	RS-3/16	NQ	D6-37	
R4A	1meg	½	40X446	AB-59	A47-1meg-S	QU1-137	U54	Vert. Hold
B	Shaft			AK-8	RS-3/16	NQ	D6-37	
R5A	100K	½	40X468	AB-40	A47-100K-S	BU1-128	PTA152L	Tone
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R6	500Ω	3(WW)	40X472	WN-501	3B-500	LU-500	R500L	Buzz
R7A	50K	½	40X467	AB-31	B47-50K-S	BU1-123	PTA54L	Vert. Linearity
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R8A	2.5meg	½	40X466	AB-83	B47-2.5meg-S	BU1-239	BU-585	Height
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R9A	2.5meg	½	40X466	AB-83	B47-2.5meg-S	BU1-239	BU-585	Sync. Stability
B	Shaft			AK-19	Not Req.	TM4	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R10	330K		R36	100K		R66	15K	
R11	3.3meg		R39	47K		R67	18K	
R12	680K		R40	10meg		R68	18K	
R13	560K		R41	100K		R69	100Ω	
R14	100K		R42	220K		R70	180K	
R15	6800Ω 4W	#43X344	R43	1meg		R71	470Ω 1W	
R16	330K		R44	33K		R72	820K	
R17	120K		R45	100K		R73	220Ω	
R18	330K		R46	100K		R74	220Ω	
R19	4700Ω		R47	33K		R75	3.5Ω (Coil)	
R20	470Ω		R48	22000Ω		R76	220K	
R21	470		R49	680Ω		R77	330K	
R22	1000Ω		R50	330K		R78	820K	
R23	68K		R51	4700Ω 1W		R79	82K	
R24	470Ω		R52	120K		R80	330K	
R25	47Ω		R53	470Ω 1W		R81	3900Ω	
R26	470Ω		R54	270Ω 1W		R82	100K	
R27	22K		R55	6800Ω 1W	Note 1	R83	22K	
R28	4700Ω		R56	56K		R84	10K	
R29	180Ω		R57	82K		R85	1meg	
R30	47K		R58	2.5meg		R86	56K	
R31	3900Ω		R59	10K		R87	68Ω	
R32	4700Ω	#43X331	R60	47K		R88	1meg	
R33	1800Ω 6%		R61	150K		R89	40K 7W	#43X343
R34	1meg		R62	6800Ω 1W		R90	4700Ω	
R35	3600Ω 4W	#43X338	R63	33000		R91	2500Ω 15W	#43X313
R36	82Ω		R64	1meg		R92	4.5Ω	#43X398
R37	1meg		R65	22K		R93	470K	

Coronado Part Number Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA CORONADO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	39MC Trap	9A2369				4202		
L2	1st Video IF	9A2365	17-4534	17-4534	TV-131	4202	VF-4	
L3A	2nd Video IF	9A2363	17-4536	17-4536		6222		
B	47.25MC Trap							
L4A	3rd Video IF	9A2414	17-4535	17-4535		6221		
B	41.25MC Trap							
L5A	4th Video IF	†						
B	Series Peaking Coil		19-3036	19-3036	TV-180	6176		30uh
L6	Resonant Choke	9A2375						330uh
L7	Shunt Peaking Coil	38A3	19-3180	19-3180	TV-184	6180	VP-5	190uh
L8	4.5MC Trap	9A2374	20-1004 ▲	20-1004 ▲	TV-181 ▲	1469 ▲	SF-3 ▲	
L9	Shunt Peaking Coil	38A16	19-3075 ▲	19-3075 ▲	TV-186 ▲	6172 ▲	VP-3 ▲	80uh ①
L10	Shunt Peaking Coil	38A49	19-4201 ■	19-4201 ■	TV-197 ■	6154 ■	VP-5 ■	190uh ②
L11	Shunt Peaking Coil	38A3	19-3180	19-3180	TV-184	6180	VP-5	190uh
L12	1st Sound IF	9A2434	17-1036	17-1036			SF-2	
L13	2nd Sound IF	9A2368	17-3495	17-3495	TV-113	6203		
L14	Quadrature Coil	9A2357	20-1005	20-1005	TV-121	1480		
L15	RF Choke	9A2380	19-1001	19-1001	BC-562	4604		1.5uh

† Part of M6.
▲ Remove C20 (390mmf cap.)

▲ Parallel with 1500Ω resistor.
■ Parallel with 1200Ω resistor.

① Wound on 1500Ω resistor.
② Wound on 1200Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L16	103Ω		S-38A1003	HS-7	TV-185	6213▲		HS-7	Horiz. Osc. Tapped ② 80Ω
			18X30						Horiz. Osc. Extension control shaft
L17	58Ω		9A3372	HS-5*		6315		HS-5*	Horiz. Waveform

* Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L18	.300A	38Ω	1 Hy.	52X104	26C44				26C44	C-28X

TRANSFORMER (POWER)

ITEM No	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② 1.85A	115V ③ .900A	6.3V ④ 9.4A	[redacted]						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Osc	54X19	26A03	A-3003	V40S	VB019	A-8125	26A03	A-97X
T3	Vert. Output	51X209			V31				A-140X
T4	Yoke-Horiz. (19.2MH) (110°)-Vert. (14MH)	9A2453 ①	Y-52 ②		Y-110 ②③		DY-27A ②③	Y-52 ②	Y-60 & NW-23 ②
	Yoke Assembly	9A2454 ④							YC-110
	Rear Cover & Centering Device	[redacted]							
	Yoke Clamp	[redacted]							D-163*
T5	Horiz. Output	[redacted]							

① Does not include rear cover and centering device.
② Connect same as original.
② Use original yoke damping network.
④ Includes rear cover and centering device.

* CONNECTION DATA

ORIGINAL	5	4	3	2	1
TRIAD	1	2	3	4	8

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	6300Ω	3-4Ω	51X208	24851 ①	A-3026	AU-501 ①	A-3850 ①	24851 ①	S-33U ①	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA CORONADO PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	12A51 ①	4GA15	① Table Models
	8"	PM		12A572 ②		② Console Models
	3½"	PM		12A574 ③		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA
X1	Sync Sep. Grid	150mmf, 270K		
X2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 82000, 82000, 33K	76X7	Aerovox PA-501 Centralab PC100 Mallory MB-100 Sprague V1/V3

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA CORONADO PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.300A	66X23	SD-500	HE504	40K	SR500	Silicon Type
M2	.300A	66X23	SD-500	HE504	40K	SR500	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA CORONADO PART No. FUSE	CORONADO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	1¼"	Length of #26 Wire						

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA CORONADO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N80	1N80 1N295 *	1N80	1N80	1N80	Video Det. (Pigtail) * Alternate.

CORONADO MODELS TV2-9570A, -9572, -9575, -9577

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M5	Tuner	25A1188	VHF
	Tuner	25A1159-4	UHF
M6	4th Video IF assy.	9A2370	

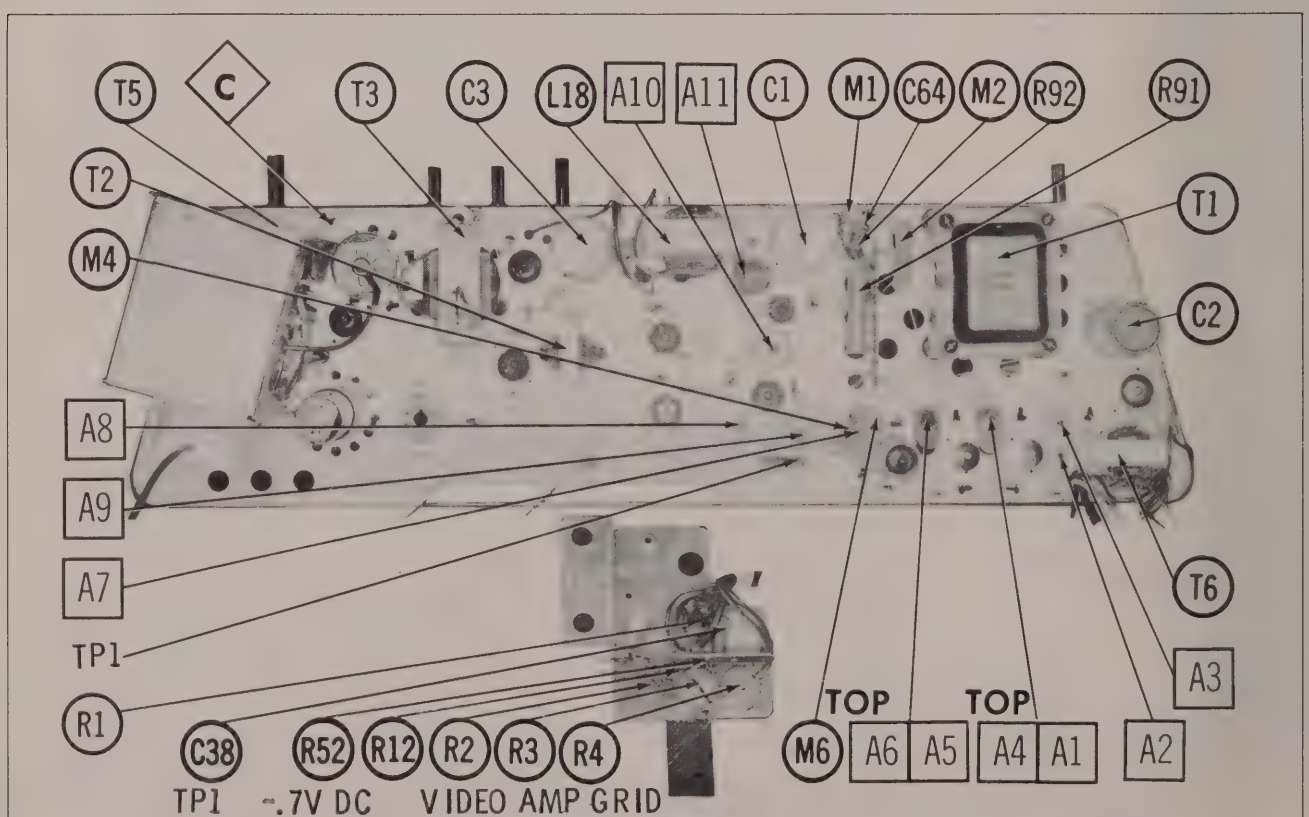
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X202-3	Tinted
Mask	4X1475-3	Picture Tube
Knob	10A985-1	Channel Selector
Knob	10A987-1	Fine Tuning
Knob	10A893-2	UHF Tuning
Knob	10A894-2	UHF Dial Indicator
Knob	10A932-1	Off-On Volume
Knob	10A944-1	Brightness, Vert. Hold, Range
Knob	10A933-1	Contrast
Dial	58X821-1	
Dial Pointer	10A984-1	

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



CHASSIS—TOP VIEW

TUNER PARTS LIST AND DESCRIPTIONS

25A1188

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6ER5/GG	V202	Mixer-Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28			TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7.0			829-7				
C209	100							
C210	.5-3.5							
C211	.5-3.5							
C212	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C213	18		NPO-DI 20	TCZ-20	C10Q18C	CCTO-180	CNO-418	10TCC-Q18
C214	7.25				C10V7C			10TS-V75
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

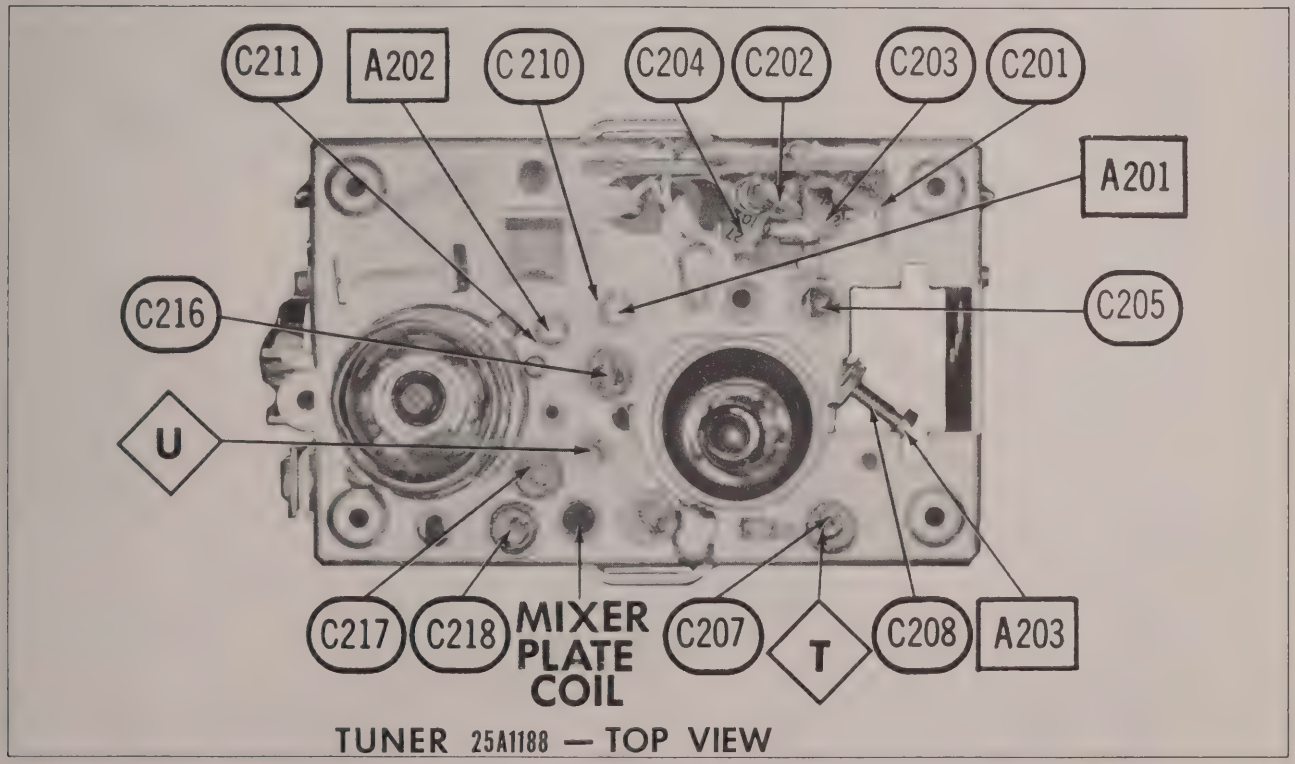
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

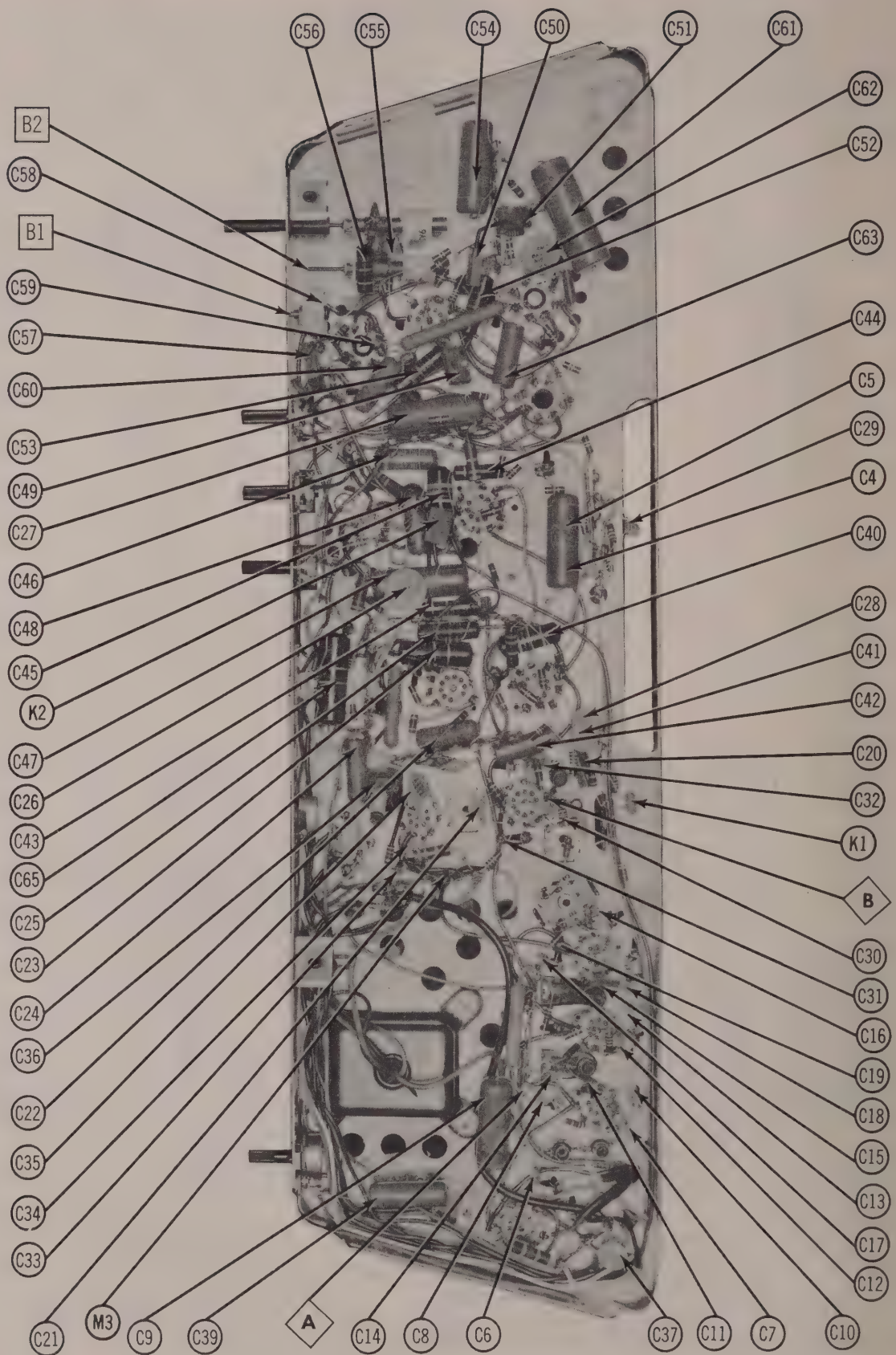
ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	2700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	1000Ω	
R206	4700Ω	

ITEM No.	RATING	REMARKS
R207	4700Ω	



TUNER 25A1188 — TOP VIEW



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

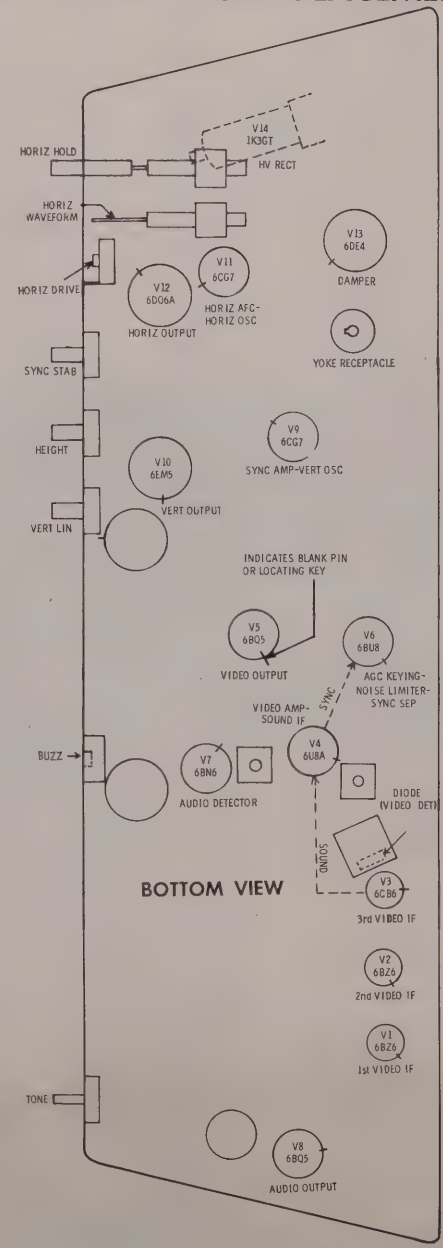
RESISTANCE MEASUREMENTS

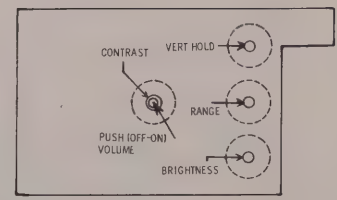
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	450K	47Ω	.1Ω	0Ω	†3500Ω	†3500Ω	0Ω		
V2	6BZ6	450K	47Ω	.1Ω	0Ω	†3500Ω	†3500Ω	0Ω		
V3	6CB6	.2Ω	180Ω	0Ω	.1Ω	†3000Ω	†3000Ω	0Ω		
V4	6U8A	†6000Ω	6Ω	†35K	.1Ω	0Ω	†35K	2200Ω	.3Ω	3900Ω
V5	6BQ5	1meg	1meg	• 200Ω	0Ω	.1Ω	NC	†3600Ω	NC	†2500Ω
V6	6BU8	†2500Ω	†6800Ω	550K	0Ω	.5Ω	†42K	•†900K	†35K	†2.2meg
V7	6BN6	• 320Ω	3.7Ω	0Ω	.1Ω	†7200Ω	5.7Ω	†330K		
V8	6BQ5	0Ω	0Ω	270Ω	0Ω	.1Ω	NC	†980Ω	NC	†470Ω
V9	6CG7	†13K	40K	0Ω	0Ω	.1Ω	•†1.8meg	•1.4meg	180Ω	0Ω
V10	6EM5	†0Ω	TP	180K	0Ω	.1Ω	180K	470Ω	TP	†290Ω
V11	6CG7	†56K	430K	0Ω	0Ω	.1Ω	†0Ω	1.5meg	410K	0Ω
V12	6DQ6A	TP	0Ω	TP	‡40K	1meg	TP	.1Ω	0Ω	TOP CAP ‡16Ω
V13	6DE4	TP	TP	¶1.2meg	NC	†.2Ω	TP	.1Ω	0Ω	
V14	1K3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP 336Ω
V15	21CEP4	0Ω	1meg	‡10meg	†100K	NC	NC	• 200K	.1Ω	
V201	6ER5/GG	0Ω	1.3meg	0Ω	.1Ω	†7800Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	†7200Ω	0Ω	0Ω	.1Ω	†7800Ω	†2500Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

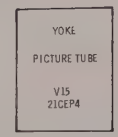
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 290V SOURCE.
‡ MEASURED FROM PIN 3 OF V13.

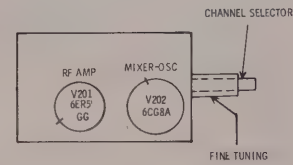
NC NO CONNECTION.
TP TIE POINT.

TUBE PLACEMENT CHART







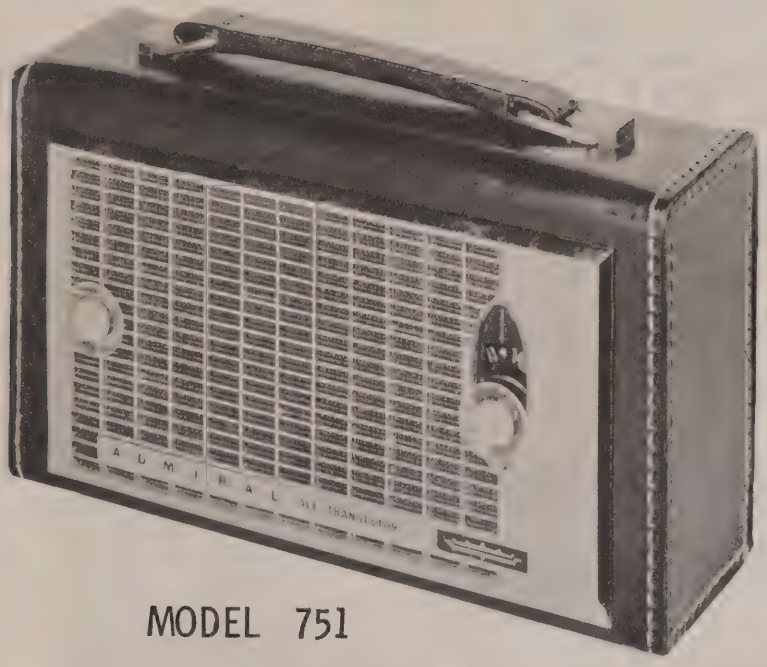


PHOTOFACT® Folder with CIRCUITRACE®

EIA MEMBER

ADMIRAL MODELS 751, 757 (Ch. 8V1)

ADMIRAL MODELS 751, 757 (Ch. 8V1)



MODEL 751

ADMIRAL MODELS 751, 757 (Ch. 8V1)

TRADE NAME	Admiral Models 751, 757 (Ch. 8V1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland Street, Chicago 47, Illinois
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
RATING	12MA @ 9 Volts DC (No Signal, Min. Volume) 15MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

A3, A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515

A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1620KC	"	"	A5	"
3.		"	1400KC	Tune to 1400KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

DISASSEMBLY INSTRUCTIONS

1. Remove 2 knobs.
2. When used, remove 2 screws from bottom of cabinet.
3. Unsnap back cover and remove battery case.
4. Remove 2 nuts from right corners of chassis.
5. Hold front escutcheon and slide chassis to right (viewed from rear).
6. Remove chassis.

NOTE: Viewed from rear, left side of chassis is held by 2 escutcheon flanges and the escutcheon may be held only by the chassis under these flanges.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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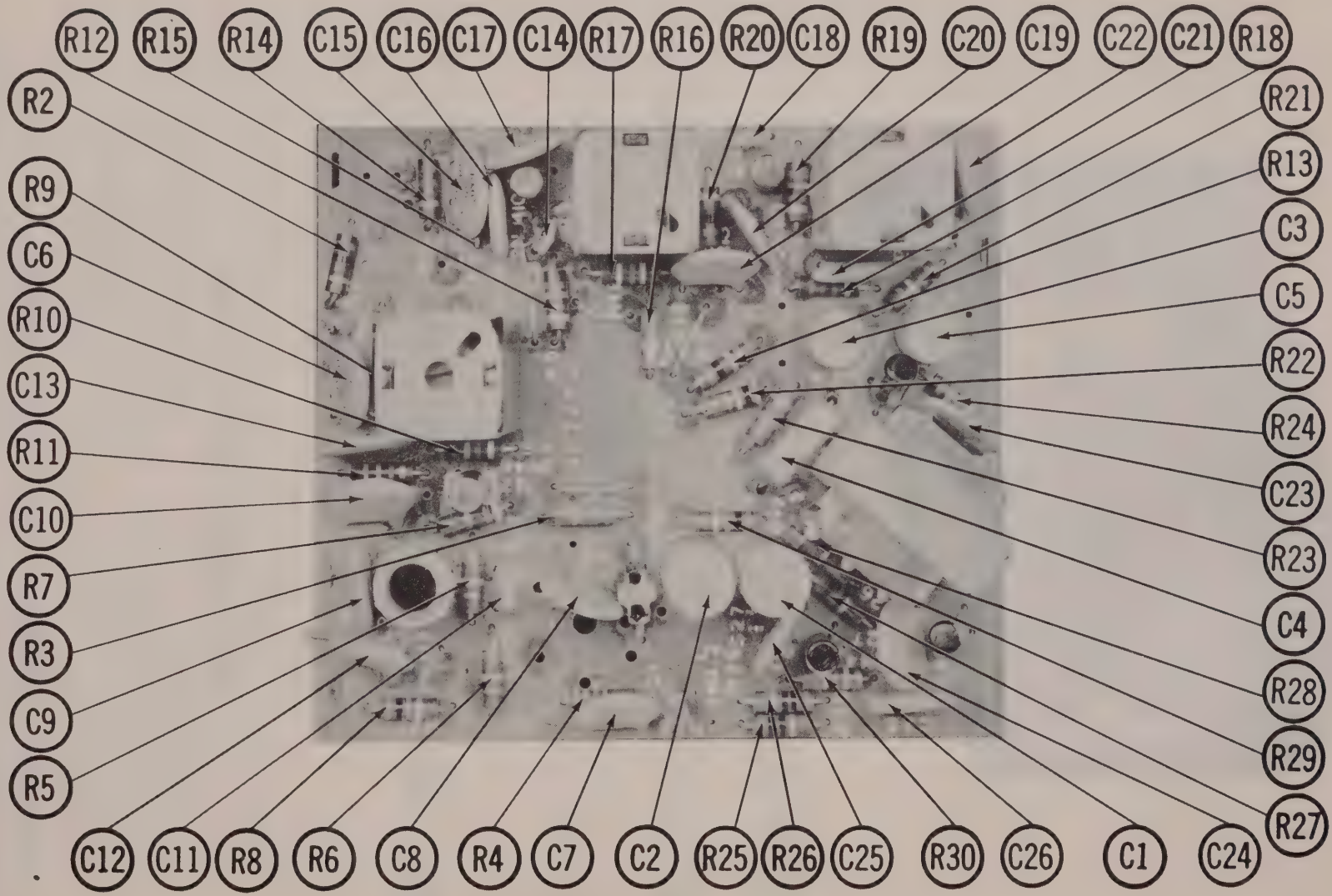
JF482

SET 473 FOLDER 3



CHASSIS TOP VIEW-CAPACITOR AND RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	RF Amplifier		2N412	2N487	2N412	PNP
X2	2N411	Mixer		2N411	2N486	2N411	PNP
X3	2N412	Oscillator		2N412	2N487	2N412	PNP
X4	2N410	1st IF Amplifier		2N410	2N483	2N410	PNP
X5	2N410	2nd IF Amplifier		2N410	2N483	2N410	PNP
X6	2N406	Driver		2N406	2N362	2N406	PNP
X7	2N408	Output		2N408	2N632	2N408	PNP } Matched
X8	2N408	Output		2N408	2N632	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	12	67B32-6	BCD12100	ECPB417	PET1500	ML100-15	VL-1140	
C2	100	12	67B32-6	BCD12100	ECPB417	PET1500	ML100-15	VL-1140	
C3	25	3	67B32-13	BCD3025	ECPA11	PET1960	ML25-3	VL-1041	
C4	10	3	67B35-6	PV E3010	EC10-3	TT3X10	ML10-6	TE-1053	
C5	90	3	67B32-10	BCD3100	ECPB417	PET1400	ML100-3	VL-1051	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

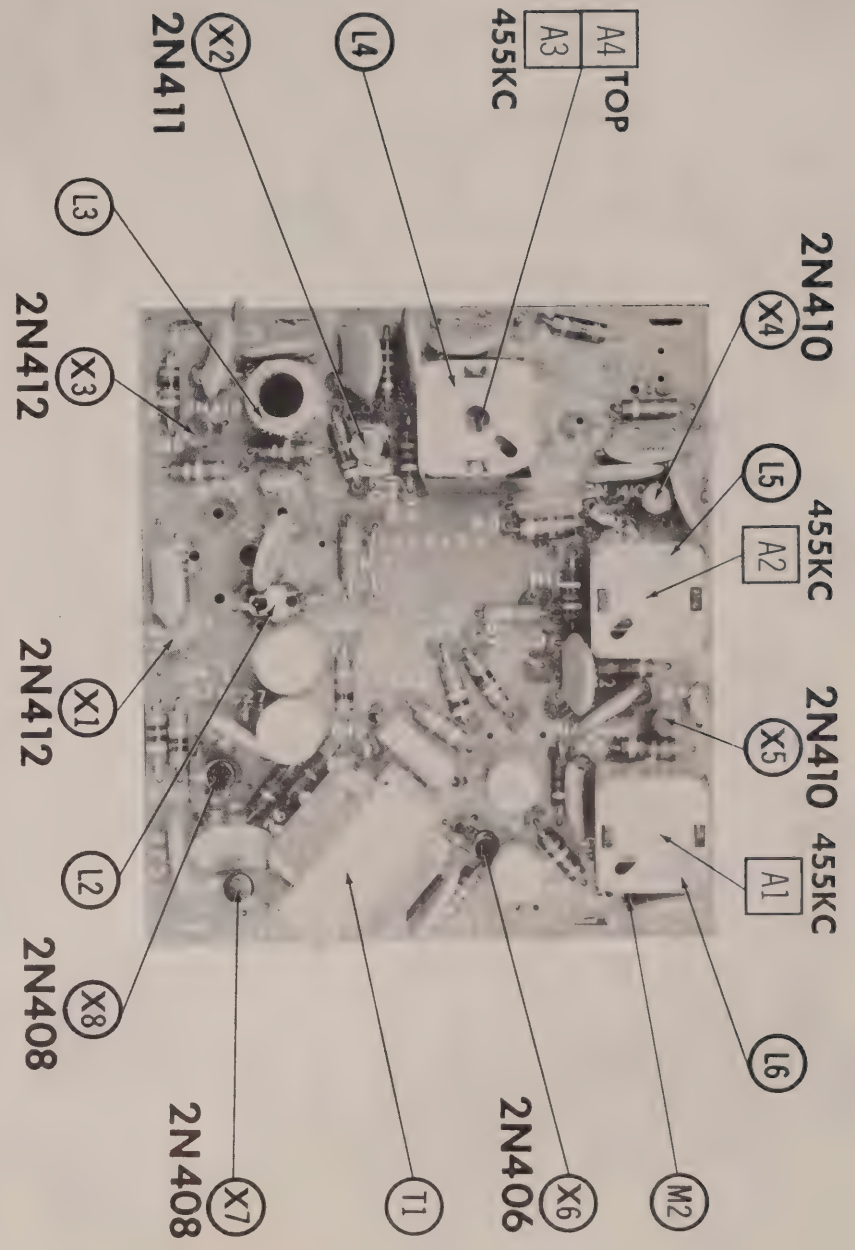
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C7	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C8	5000		BPD-005	DD-502	BYA10D5	CCD-502	TA-250	5HK-D50
C9	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C10	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C11	470		DI-470	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C14	3.6 NPO .25mmf	#65D10-190			C10V4C			10TCC-V39
C15	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C16	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C17	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C18	3.6 NPO .25mmf	#65D10-190			C10V4C			10TCC-V39
C19	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C20	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C21	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C22	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50
C23	3900		DI-4000	DD-392	L10D39	CCD-392	GP239	10TS-D39
C24	3900		DI-4000	DD-392	L10D39	CCD-392	GP239	10TS-D39
C25	3900		DI-4000	DD-392	L10D39	CCD-392	GP239	10TS-D39
C26	50000		BPD-05	DD-503	H-05S5		TA-150	TG-S50

Admiral Part Number

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	½	75B36-2					Volume & Switch

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	220Ω	
R4	360Ω 5%	
R5	15K 5%	
R6	15K 5%	
R7	4300Ω 5%	
R8	1000Ω	
R9	1000Ω	
R10	560Ω	
R11	680Ω 5%	

ITEM No.	RATING	REMARKS
R12	5600Ω	
R13	100K 5%	
R14	2200Ω	
R15	430Ω 5%	
R16	16K 5%	
R17	2700Ω	
R18	220Ω	
R19	5600Ω	
R20	1000Ω	
R21	3900Ω	

ITEM No.	RATING	REMARKS
R22	30K 5%	
R23	5600Ω	
R24	560Ω	
R25	10Ω	
R26	10Ω	
R27	100Ω	
R28	5100Ω	
R29	100Ω	
R30	270Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ADMIRAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	69B235-1						
L2	RF Choke	73C5-38 ①						
L3	Osc. Coil	69A222-3 *						
L4	1st IF Trans.	72C189-3 †						
L5	2nd IF Trans.	72C190-1 ■						
L6	3rd IF Trans.	72C190-2 ▲						

① Wound on 470Ω resistor. * Green Dot. † Orange Dot. ■ Brown Dot. ▲ Red Dot.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.2	1	79B76-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	55Ω CT	3-4Ω	(Part of SP1)							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	78C156-3①	4A1	① Includes T2

BATTERIES

ITEM No.	VOLTAGE	ADMIRAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			1①		635①		①M-14M	① 6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ADMIRAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	1N295	1N60	1N295	1N295	Detector (Pigtail)

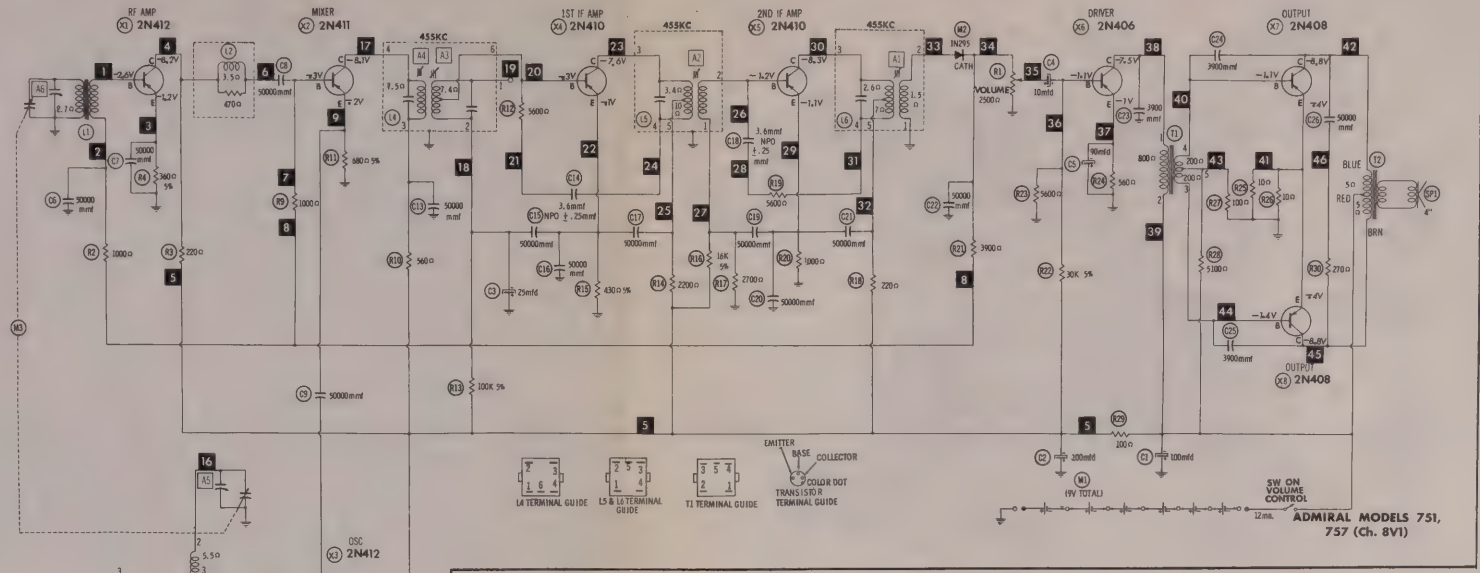
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M3	Tuning Capacitor	68C66-12	2 Gang (Ant. 30-272.3mmf, Osc. 20-102.1mmf)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	33B312-1	Tuning
Knob	33B311-2	Volume
Dial	33B313-1	Station Indicator Disc.
Escutcheon	23D346-1	Cabinet Front
Cabinet	34D140-4	Black, Model 751
Cabinet	34D140-5	Tan, Model 757



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings
5. Volume control at maximum, no signal applied for voltage measurements

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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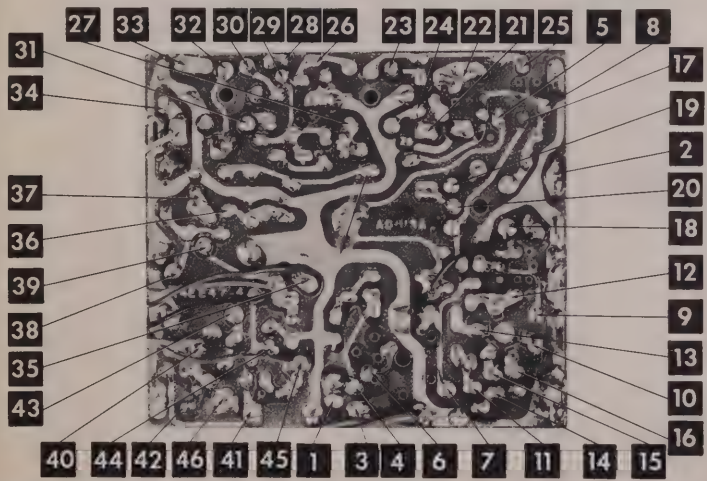
ADMIRAL MODELS 751, 757 (Ch. 8V1)



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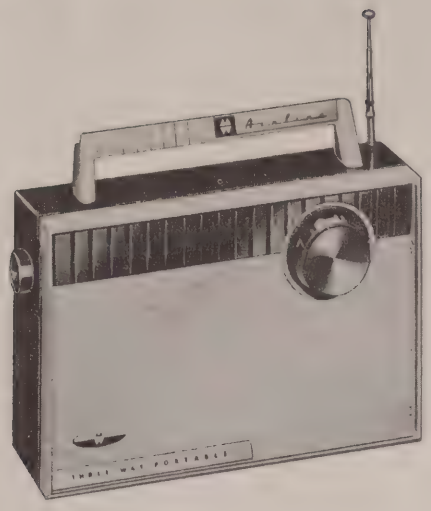
PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER

AIRLINE MODEL GTM-1117A

AIRLINE MODEL GTM-1117A



TRADE NAME	Airline Model GTM-1117A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Three Power Portable 5 Tube AM Receiver
POWER SUPPLY	110-120 Volts AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply
RATING	12 Watts, .11 Amp. @ 117 Volts AC (or) 56MA @ 9 Volts DC & 11.5MA @ 90 Volts DC
TUNING RANGE	BROADCAST 540 - 1600KC

AIRLINE MODEL GTM-1117A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1mfd capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A1, A2, A3, A4 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8, A9 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 6 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200mmf to reduce hum modulation.
2.	15mmf	High side to point (A) Low side to chassis.	1625KC	"	"	A5	"
3.	"	"	1400KC	1400KC	"	A6, A7	"
4.	"	"	600KC	600KC	"	A8, A9	"

DISASSEMBLY

1. Open the case by pressing two buttons on either side of the cabinet.
2. Disconnect and free the battery leads.
3. Remove two screws holding AC receptacle.
4. Unsolder the telescoping antenna lead (from loop end of C3, 1000mmf).
5. Remove volume control knob from shaft. Knob is captive and remains with cabinet.
6. Remove three screws holding chassis bracket to cabinet top.
7. Press dial light button into the cabinet and pull assembly out from the cabinet.
8. Slide chassis from cabinet.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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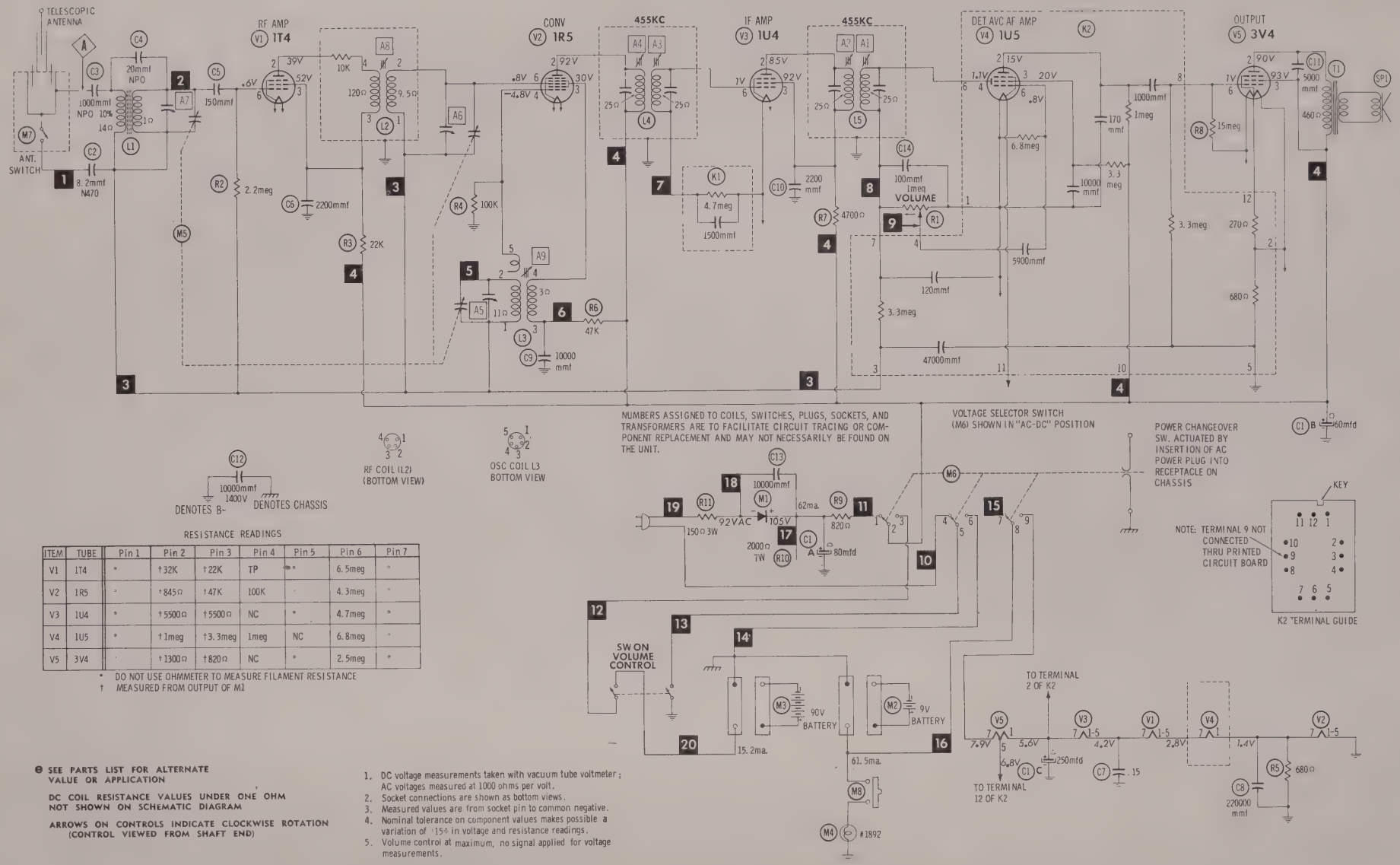
HF997R

SET 473 FOLDER 4


TELESCOPIC ANTENNA
ANT. SWITCH
RF AMP V1 1T4
CONV V2 1R5
455KC
IF AMP V3 1U4
455KC
DET AVC AF AMP V4 1U5
OUTPUT V5 3V4
VOLUME
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
VOLTAGE SELECTOR SWITCH (M6) SHOWN IN "AC-DC" POSITION
POWER CHANGEOVER SW. ACTUATED BY INSERTION OF AC POWER PLUG INTO RECEPTACLE ON CHASSIS
RF COIL (L2) (BOTTOM VIEW)
OSC COIL L3 BOTTOM VIEW
DENOTES B-
DENOTES CHASSIS
SW ON VOLUME CONTROL
90V BATTERY
9V BATTERY
TO TERMINAL 2 OF K2
TO TERMINAL 12 OF K2
K2 TERMINAL GUIDE
NOTE: TERMINAL 9 NOT CONNECTED THRU PRINTED CIRCUIT BOARD

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1T4	*	†32K	†22K	TP	*	6.5meg	*
V2	1R5	*	†845Ω	†47K	100K	·	4.3meg	*
V3	1U4	*	†5500Ω	†5500Ω	NC	*	4.7meg	*
V4	1U5	*	†1meg	†3.3meg	1meg	NC	6.8meg	*
V5	3V4	·	†1300Ω	†820Ω	NC	*	2.5meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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AIRLINE MODEL GTM-1117A

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	1T4
V2	Converter	1R5
V3	IF Amplifier	1U4
V4	Det. - AVC - AF Amp.	1U5
V5	Output	3V4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	150	218V025H18			WT407		VLS-3423 *	
B	■60	150							
C	▲250	15							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	8.2 N470 10%	#215V300H46						
C3	1000 NPO 10%							
C4	20 NPO	①	NPO-DI 20	DTZ-20	C10Q2C	CCTO-200	CNO-422	5TCC-Q2
C5	150		BPD-00015	DD-151	L10T15	CCD-151	B-315	5GA-T15
C6	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C7	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C8	220000	#215V309H01			CUB2P22	2DP-4-224	GEM-2025	2WF-P22
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C11	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C12	1000 1400V		DAC-27	DD16-103		16DP-1-102	2HV-110	BL-S10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	100		BPD-0001	DD-101	L10T1	CCD-101	UC-531	5GA-T10

① Some versions may use 15mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	270V027H06					Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	22K	
R4	100K	
R5	680Ω	

ITEM No.	RATING	REMARKS
R6	47K	
R7	4700Ω	
R8	15meg	
R9	820Ω	

ITEM No.	RATING	REMARKS
R10	2000Ω 7W	
R11	150Ω 3W	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA AIRLINE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick	310V031H02						Includes 10K
L2	RF Trans	230V64H01						
L3	Osc. Coil	230V067H02						
L4	Input IF Trans.	235V043H01	16-6780	16-6780	BC-356	13-PC1	RF-4	
L5	Output IF Trans.	235V043H01	16-6780	16-6780	BC-357	13-PC2	RF-4	

PRINTED BOARD

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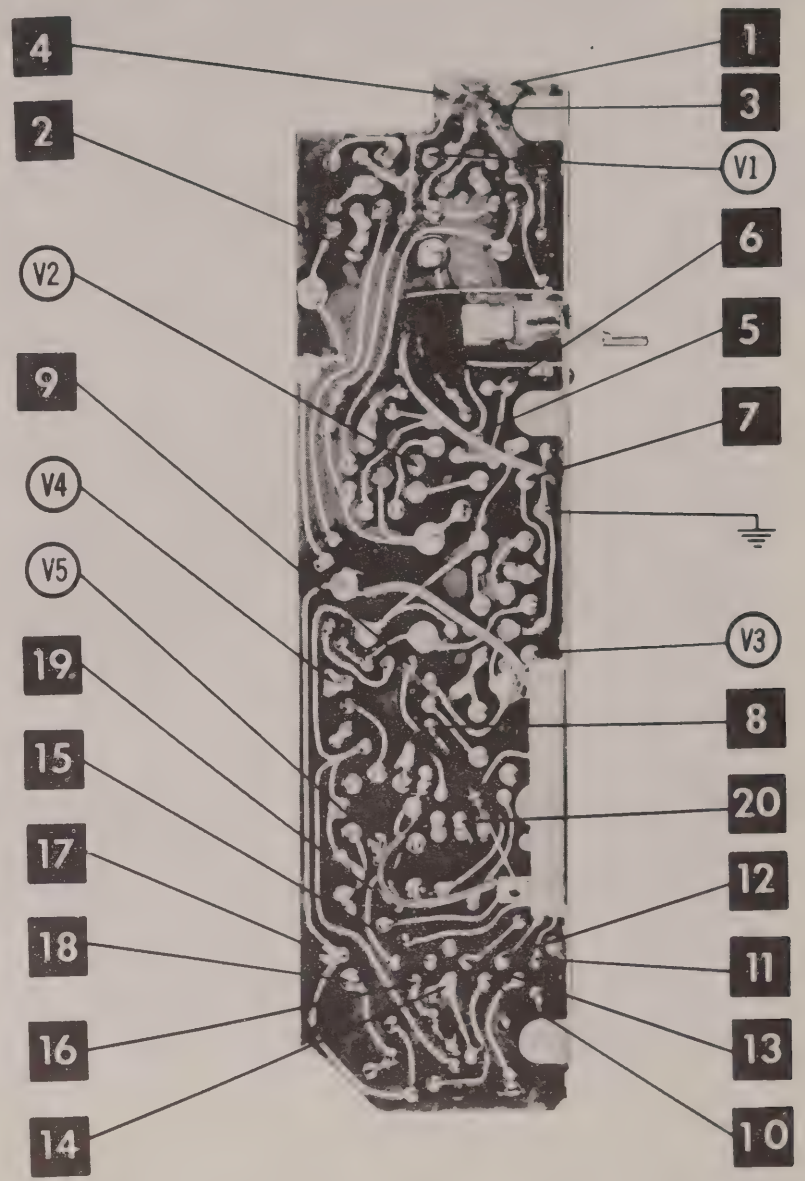
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9600Ω	3-4Ω	(Part of SP1)	24S83	A-2998		A-3329	24S83	S-11X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	570V050H01	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K1	IF Grid Bias	4.7meg, 1500mmf	219V004H01	Sprague PRC-8
K2	Det. - Audio Circuitry	120mmf, 170mmf, 1000mmf, 5900mmf, 10000mmf, 47000mmf, 270Ω, 680Ω, 1meg, (3) 3.3meg, 6.8meg	219V026H01	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	AIRLINE PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.062A	295V014H01	TO65 ① SD-94 ②	1234AH ① HE15U1 ②	65S ① K200 ②		① Selenium Type ② Silicon Type

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M2	9V	62-93	D6		276		M-1603		
M3	90V	62-55		P60		479		M-214	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Lamp		
M5	Tuning Cap.	330V021H01	3 Gang
M6	Switch	756V030H01	AC-DC Battery (3PDT, Plug Actuated, Spring Return)
M7	Switch	318V034H01	Telescopic Antenna On-Off (SPST, Leaf Spring)
M8	Switch	778V103H01	Pilot Light On-Off (SPST, Leaf Spring)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

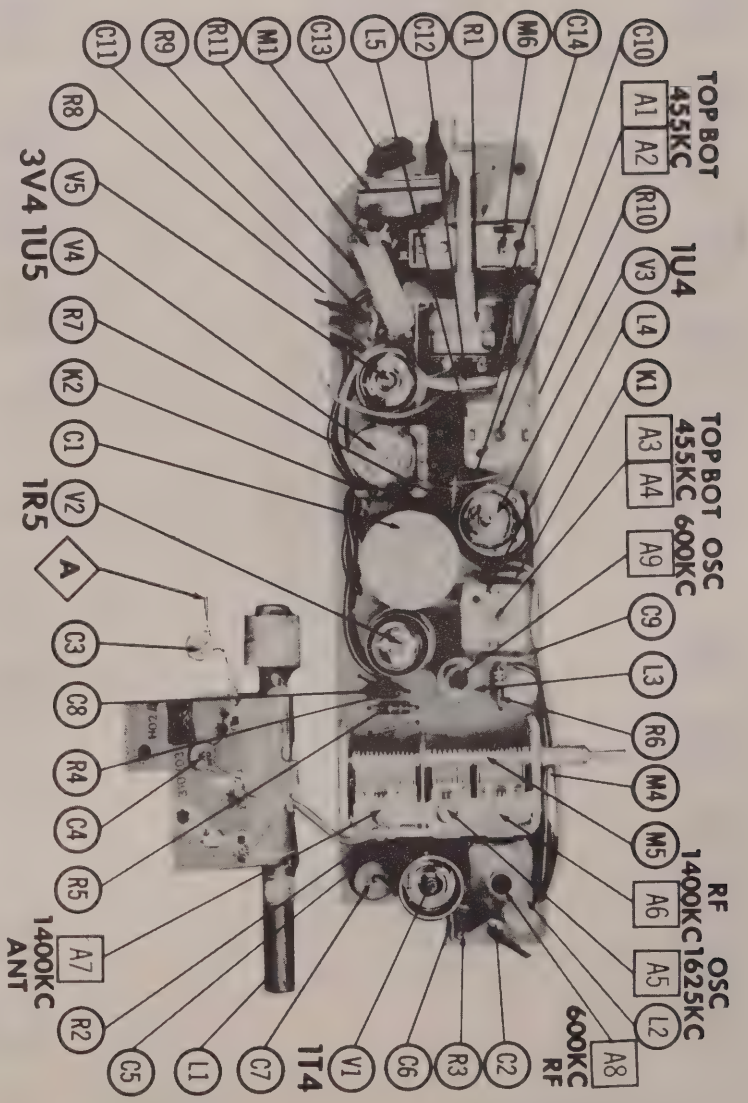
NAME	PART NO.	DESCRIPTION
Knob	550V094H01	Tuning
Knob	550V096H03	Volume-On-Off
Knob	550V093H01	Dial
Cabinet	513V013H01	
Handle	558V164H01	
Antenna	318V004H01	Telescopic (Includes M7)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

EIA

ARVIN MODEL 5591 (Ch. 1.46700)

ARVIN MODEL
5591 (Ch. 1.46700)

ARVIN MODEL
5591 (Ch. 1.46700)

TRADE NAME	Arvin Model 5591 (Ch. 1.46700)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC Operated 5 Tube AM Receiver with Electric Clock
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	20 Watts, .23 Amp. @ 117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	540 - 1670KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 1 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	600KC	"	A6	"
4.		"	1400KC	Tune to 1400KC signal	"	A7	Adjust for maximum output while rocking tuning gang.

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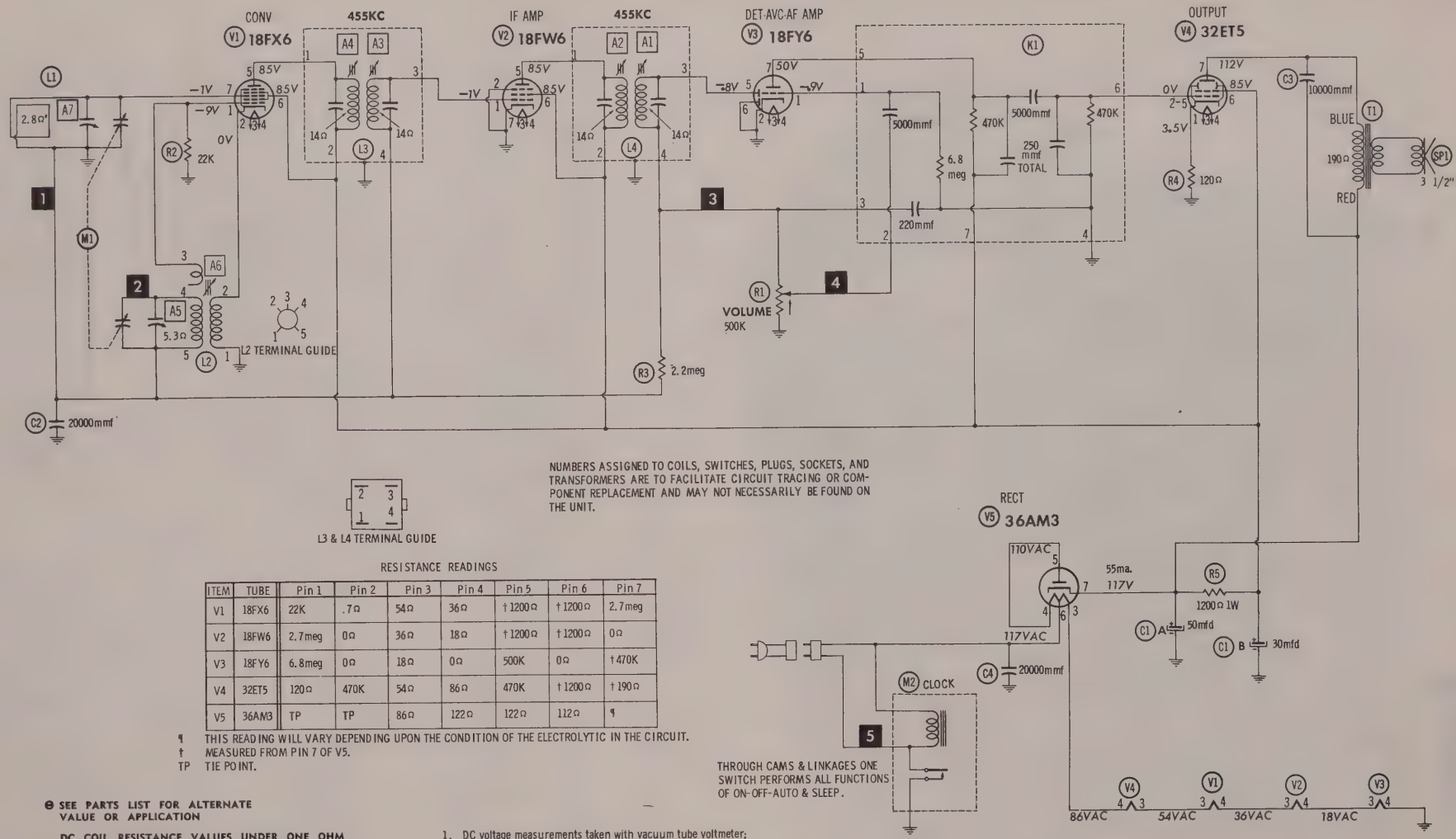

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	18FX6	22K	.7Ω	54Ω	36Ω	†1200Ω	†1200Ω	2.7meg
V2	18FW6	2.7meg	0Ω	36Ω	18Ω	†1200Ω	†1200Ω	0Ω
V3	18FY6	6.8meg	0Ω	18Ω	0Ω	500K	0Ω	†470K
V4	32ET5	120Ω	470K	54Ω	86Ω	470K	†1200Ω	†190Ω
V5	36AM3	TP	TP	86Ω	122Ω	122Ω	112Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
TP TIE POINT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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ARVIN MODEL 5591 (Ch. 1.46700)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	18FX6 (12BE6) *	V4	Output	32ET5 (50C5) *
V2	IF Amplifier	18FW6 (12BA6) *	V5	Rectifier	36AM3 (35W4) *
V3	Det. - AVC - AF Amp.	18FY6 (12AV6) *			

* 300MA Filament Equivalent.
Replacing with a 300MA equivalent, necessitates replacing all tubes with 300MA equivalent.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	44328-4	PRS2200	BBRD5315	WD210	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	20000		BPD-02	DD-203	BYB6S1	CCD-203	B-120	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	500K	½	45250-15					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	22K	
R3	2.2meg	

ITEM No.	RATING	REMARKS
R4	120Ω	

ITEM No.	RATING	REMARKS
R5	1200Ω 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA
K1	Detector-Audio Coupling	250mmf (Total), 220mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg	43743-2	Aerovox PA-512-3 Centralab PC-158 Sprague DT-5

PRINTED BOARD

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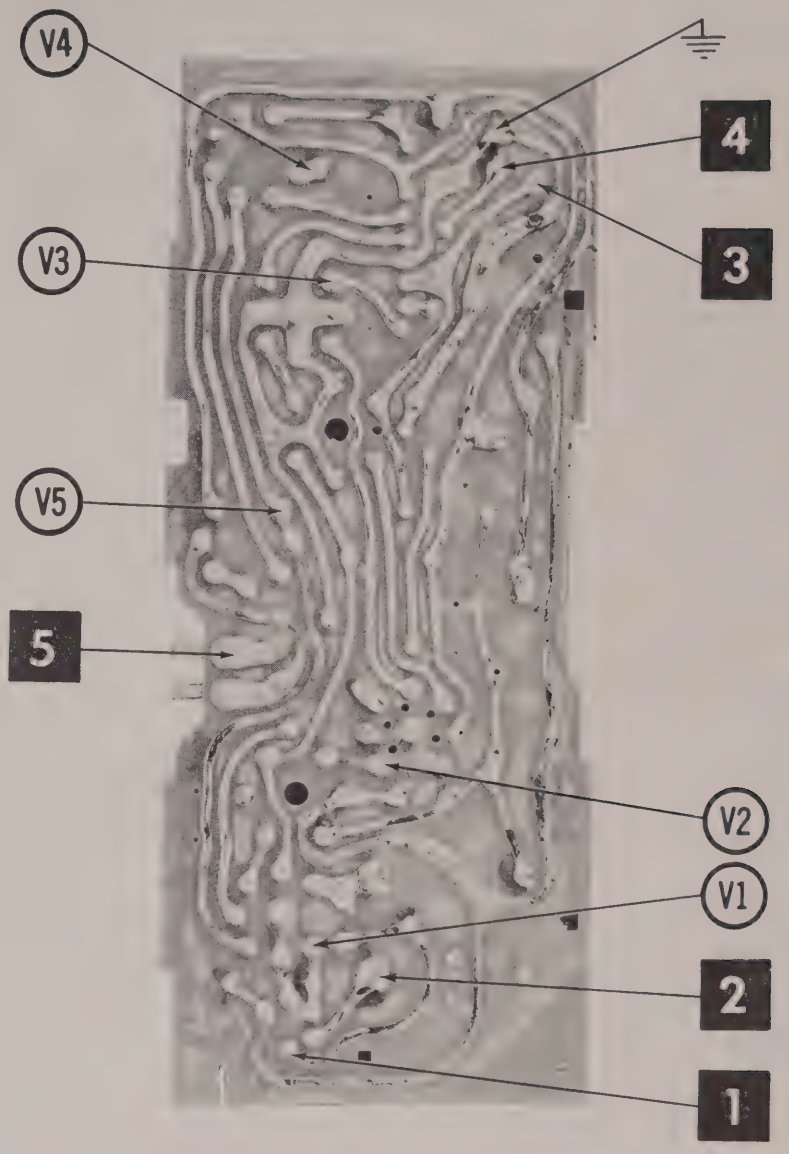
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ARVIN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Antenna	46519-1 ①						
L2	Osc. Coil	43644-1						
L3	Input IF	44282-1	16-6780	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	44282-1	16-6780	16-6780	BC-357	13-PC10	RF-4	

① Includes rear cover.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ARVIN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	42700-21	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	46523-1 *	4A07	* Includes T1.

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Tuning Cap.	45252-1	2 Gang
M2	Clock	46524-061	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

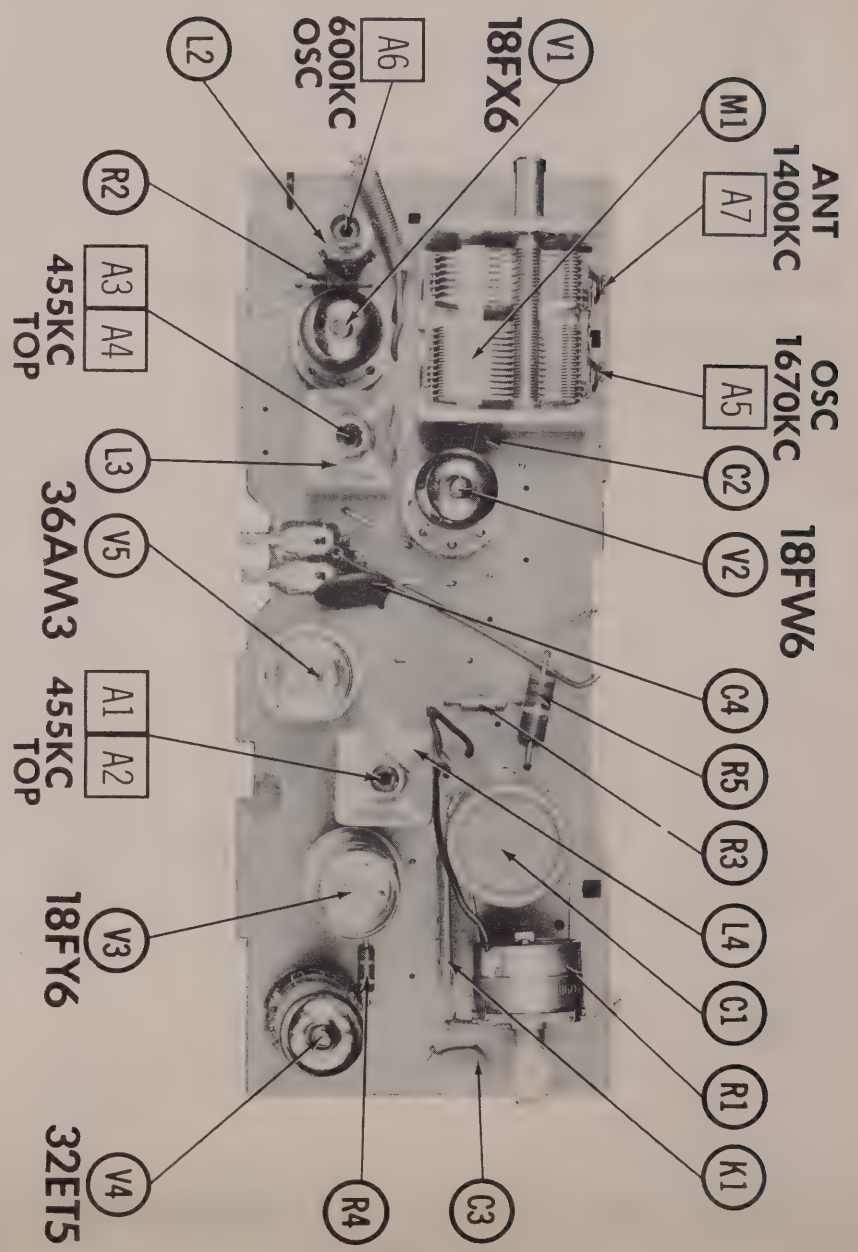
NAME	PART NO.	DESCRIPTION
Knob	46517-67	Tuning
Knob	46518-67	Volume
Knob	46526-671	Clock
Cabinet	46516-19	Charcoal
Cabinet	46516-86	Green
Clock Crystal	46527	
Clock Hand	46540-67	Hour
Clock Hand	46541-67	Minute
Clock Hand	46542-33	Second
Clock Hand	46543-33	Alarm Set

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT® Folder

EIA

CAVALIER
MODEL 562

CAVALIER
MODEL 562

CAVALIER
MODEL 562

TRADE NAME	Cavalier Model 562
MANUFACTURER	Hinners-Galanek Radio Corp., 66-02 Austin Street, Forest Hills 74, N. Y.
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	105-125 Volts AC-DC
RATING	25 Watts, .27 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd.	High side to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal.	"	A6	Adjust for maximum output while rocking tuning gang.

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JG581

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆	RAYTHEON ◆	SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Converter	12BE6
V2	I F Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CAVALIER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	70	150		PRS2230	BBRD8415	WD220	TDLD-10	TVA-2460	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S5
C3	240 5%		1469-00024	TCZ-240	22R5T24	CM-20B-241J	MCB240	MS-324
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	.02 400V		P488N-02		CUB4S2	4DP-2-203	GEM-412	4TM-S2
C7	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C8	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CAVALIER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	120-106	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

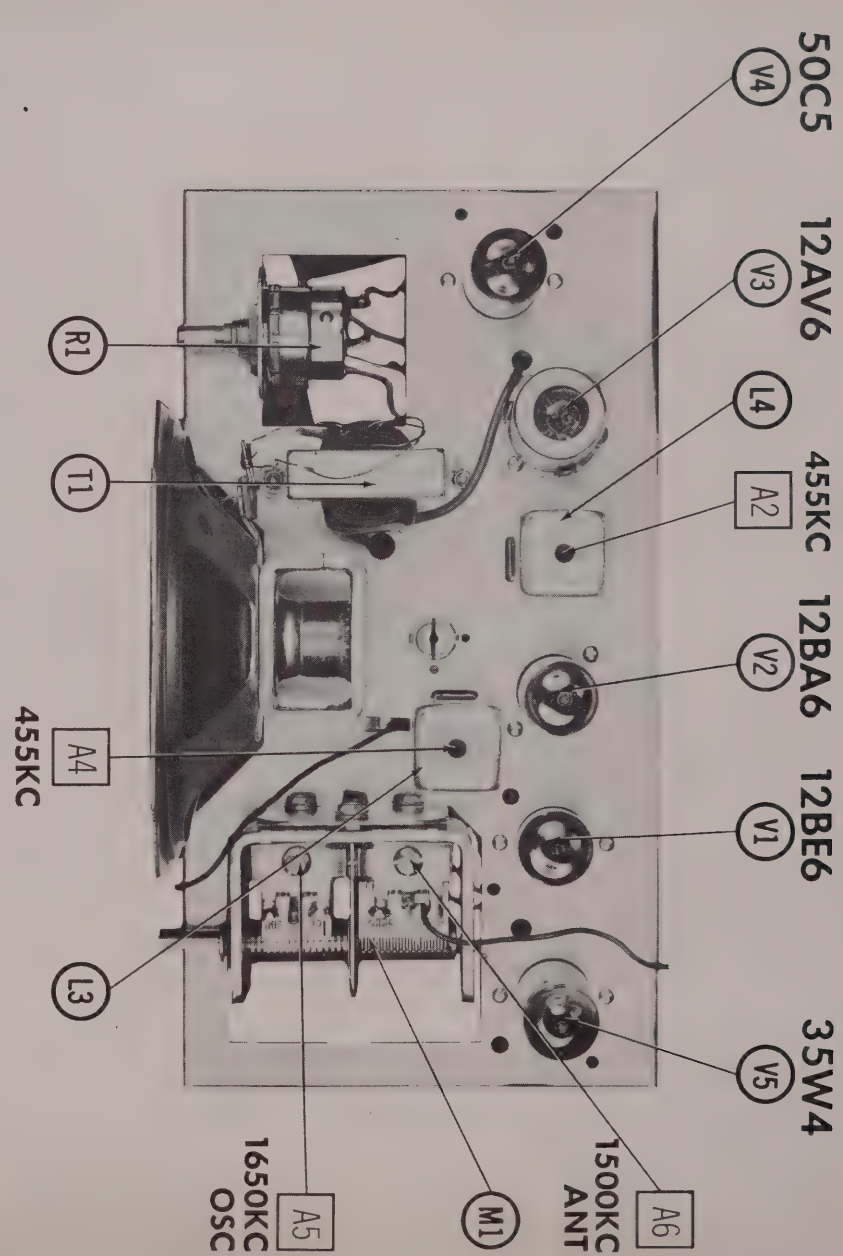
ITEM No.	RATING	REMARKS
R2	22K 5%	
R3	220Ω	(270Ω) *

* Alternate

ITEM No.	RATING	REMARKS
R4	2.2meg	
R5	6.8meg	

ITEM No.	RATING	REMARKS
R6	150Ω	
R7	2200Ω 1W	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CAVALIER PART No.	REPLACEMENT DATA	
K1	Audio-Detector Coupling	250mmf, 5000mmf, 220K, 470K	①	Aerovox Centralab Cornell-Dubilier Mallory Sprague	PA-112-2 PC-71 112TM2 MS-111 T-4

① Some versions may use individual components.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CAVALIER PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.							
L2	Osc. Coil							
L3	Input IF		16-6758	16-6758	BC-352	12-C1	RF-1	
L4	Output IF		16-6758	16-6758	BC-353	12-C2	RF-2	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CAVALIER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2500Ω	3-4Ω	138-118B	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CAVALIER PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω		4A07	

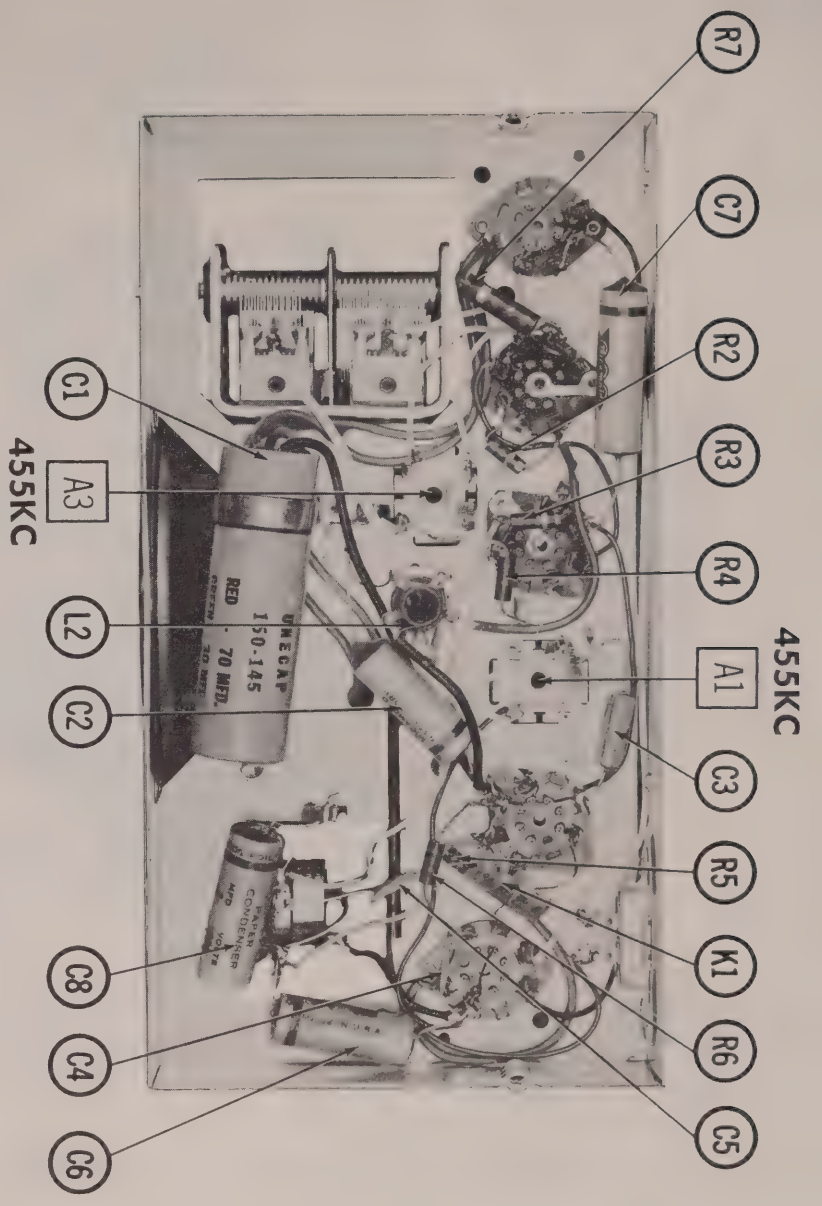
MISCELLANEOUS

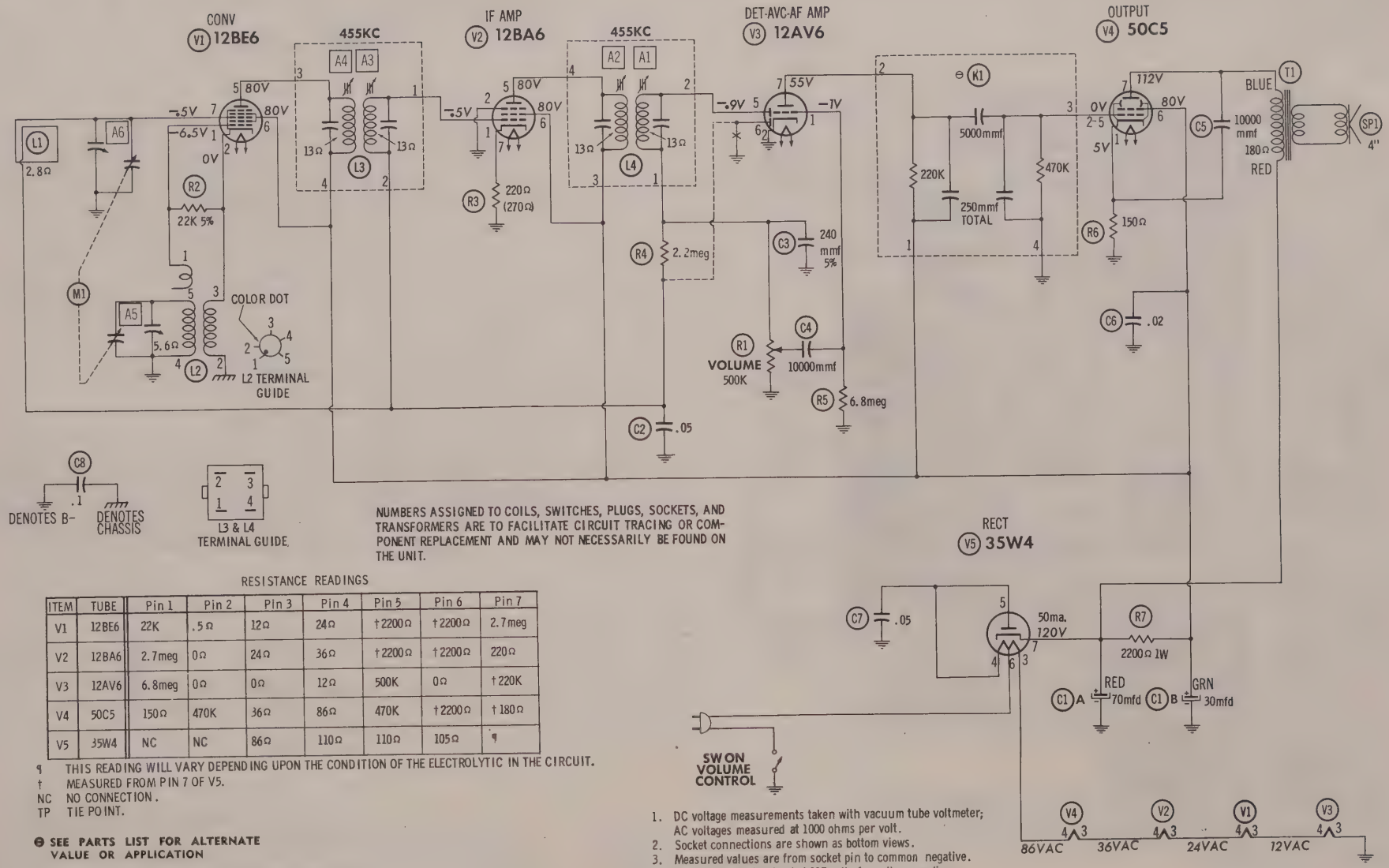
ITEM No.	PART NAME	CAVALIER PART No.	NOTES
M1	Tuning Cap		2 Gang (Ant. 17—483mmf, Osc. 26—181mmf)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	12Ω	24Ω	†2200Ω	†2200Ω	2.7meg
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†2200Ω	†2200Ω	220Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	500K	0Ω	†220K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†2200Ω	†180Ω
V5	35W4	NC	NC	86Ω	110Ω	110Ω	105Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.
TP TIE POINT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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CAVALIER MODEL 562

PHOTOFACT® Folder

EIA MEMBER

DUMONT CHASSIS
RA-505

DUMONT CHASSIS
RA-505

DUMONT CHASSIS
RA-505

TRADE NAME	Dumont Models Music Master, Music Master Stereo (Ch. RA-505)
MANUFACTURER	Dumont Tel. & Radio Corp., 14th & Coles Streets, Jersey City 2, N. J.
TYPE SET	AC Operated 4 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 37 Watts, .38 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #19035191 - SEE SIMILAR V-M 1201 - PHOTOFACT SET 436 FOLDER 18

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT506

DATE 2-60

SET 473 FOLDER 7

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	AF Amp. - Phase Inv.	12AX7	V3	Output	6AQ5A
V2	Output	6AQ5A	V4	Rectifier	EZ80/6V4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	DUMONT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	03191463	AFH2-56	B0440	FP343.6	TMD-53	TVL-2736	
B	▲20	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	220		DI-220	DD-221	L10T22	CCD-221	B-322	5GA-T22
C3	68			DD-680	L10Q68	CCD-680	UC-5468	5GA-Q68
C4	1000 10%		DI-1000	DD-102	PM6D1	CCS-102	JL-210	10TS-D10
C5	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C6	270 10%			DD-271	L10T27	CCD-271	GP327	10TS-T27
C7	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GEM-615	5HK-S50
C8	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C9	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GEM-615	5HK-S50
C10	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C11	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GEM-615	5HK-S50
C12	.022 200V		P288N-022		CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C13	10000 1400V	①	DAC-27	DD16-103	HVE16S1	16DP-3-103	2HV-110	BL-S10

① Not used in stereo companion amplifier.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DUMONT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	3meg	½	01072191	BT-82		Q18-140X		Volume, Tap ② 1.7meg
R2A	3meg	½	01072193	B-84	A47-3meg-S	Q11-140	U59	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	01072192	B-75	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	220K	
R5	150K	
R6	470K	
R7	1500Ω	
R8	100K	
R9	100K	

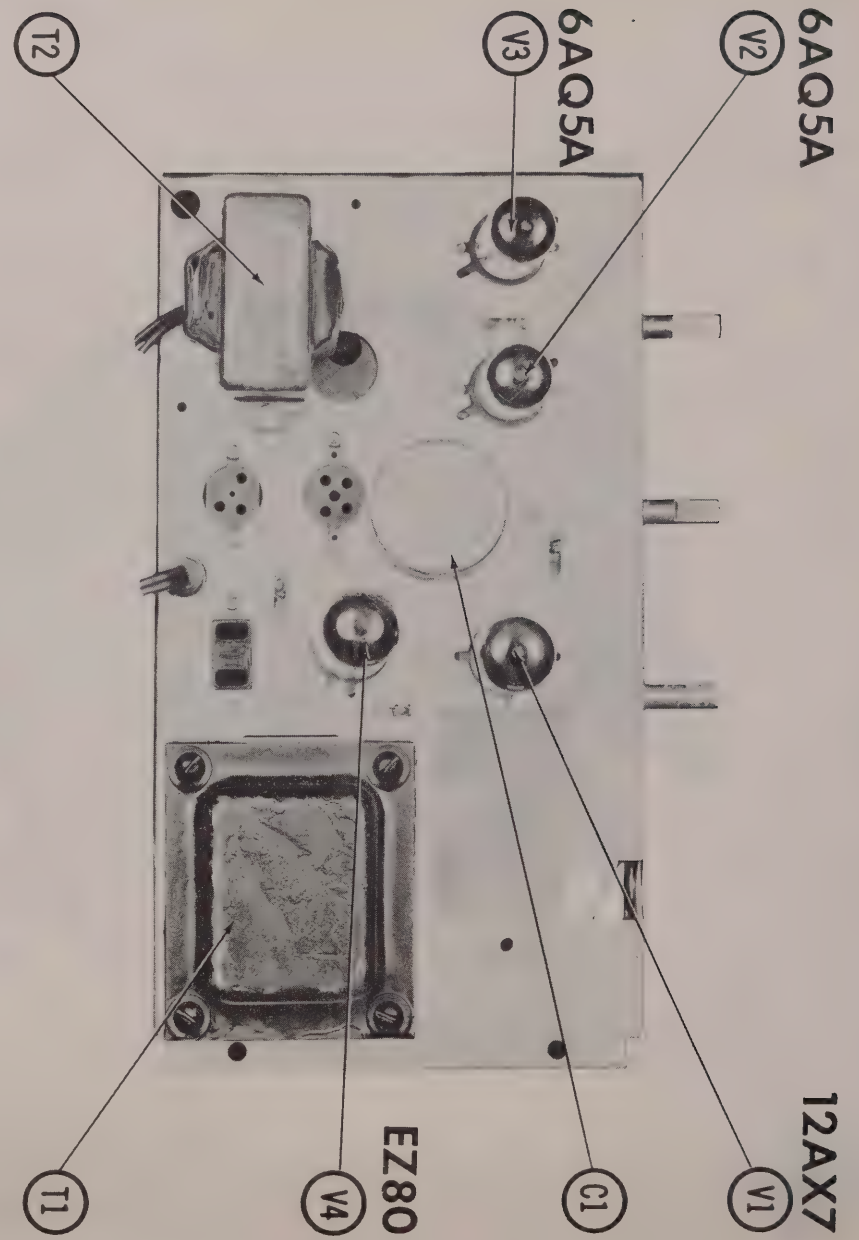
ITEM No.	RATING	REMARKS
R10	22K	
R11	470K	
R12	470K	
R13	220Ω 2W	
R14	4700Ω 1W	
R15	4700Ω 1W	

ITEM No.	RATING	REMARKS
R16	150K	
R17	100Ω	
R18	100Ω	
R19	18K	
R20	180K	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .38A	470VCT ② .060A	6.3V ② 1.8A	20014031	24R12	P-3051		PM8419	24R12	R-8B

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω CT	3-4Ω	20014071	24S07	A-2901	AU-600	A-3823	24S07	S-53X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DUMONT PART No.	QUAM PART No.	
SP1	8"	PM	3-6Ω	18004183	8A31	
SP2	Electrostatic			89015854		
SP3	Electrostatic			89015854		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	DUMONT PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	19035251 ① 19035221 ②	93-TX	Not Req.	EV56 *	Not Req.				

① Monaural ② Stereo * Use PT-2 Mount.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS		
	DUMONT PART No.	CLEVITE WALCO PART No.	JENSEN PART No.			
M2	①	* W-201DS ♦ † or * W-201TPS †		† Jewel	♦ Diamond * Includes Cartridge	① Monaural

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M3	Switch Switch	05015451	Off-On (On phono monaural unit) Off-On (On stereo chassis when used)

CABINETS & CABINET PARTS

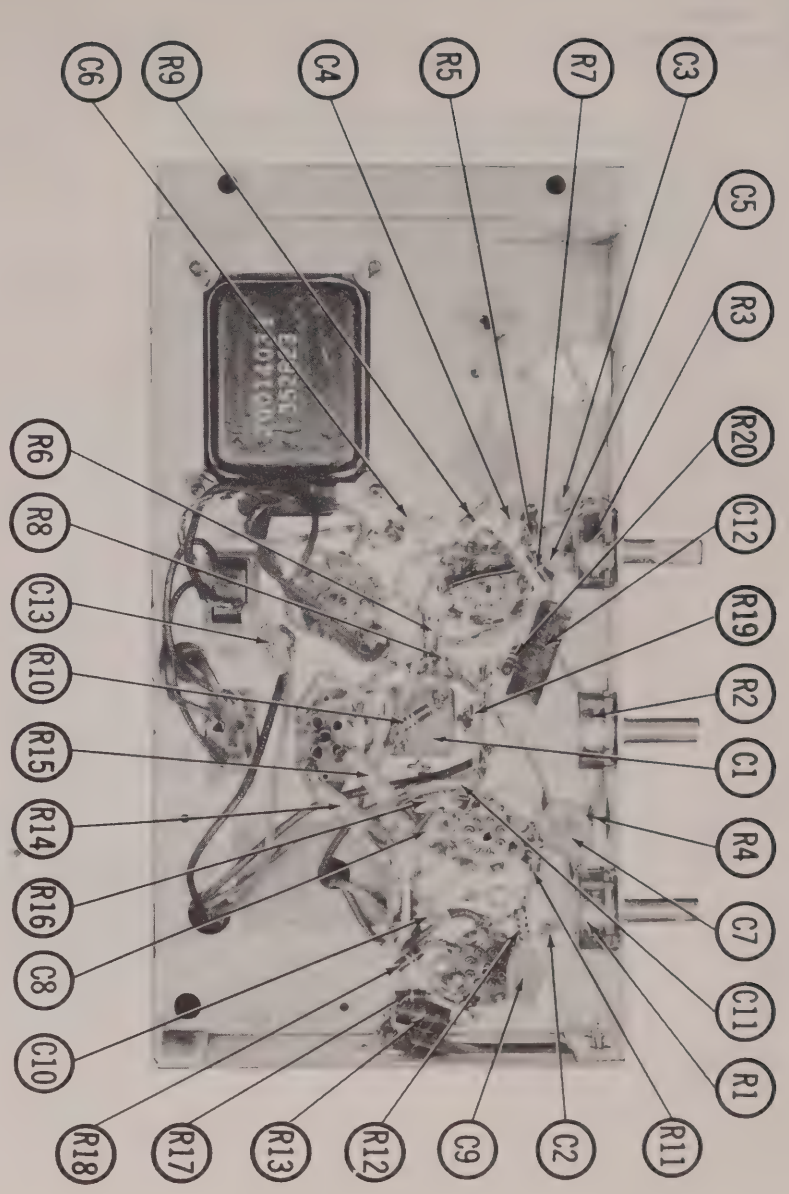
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

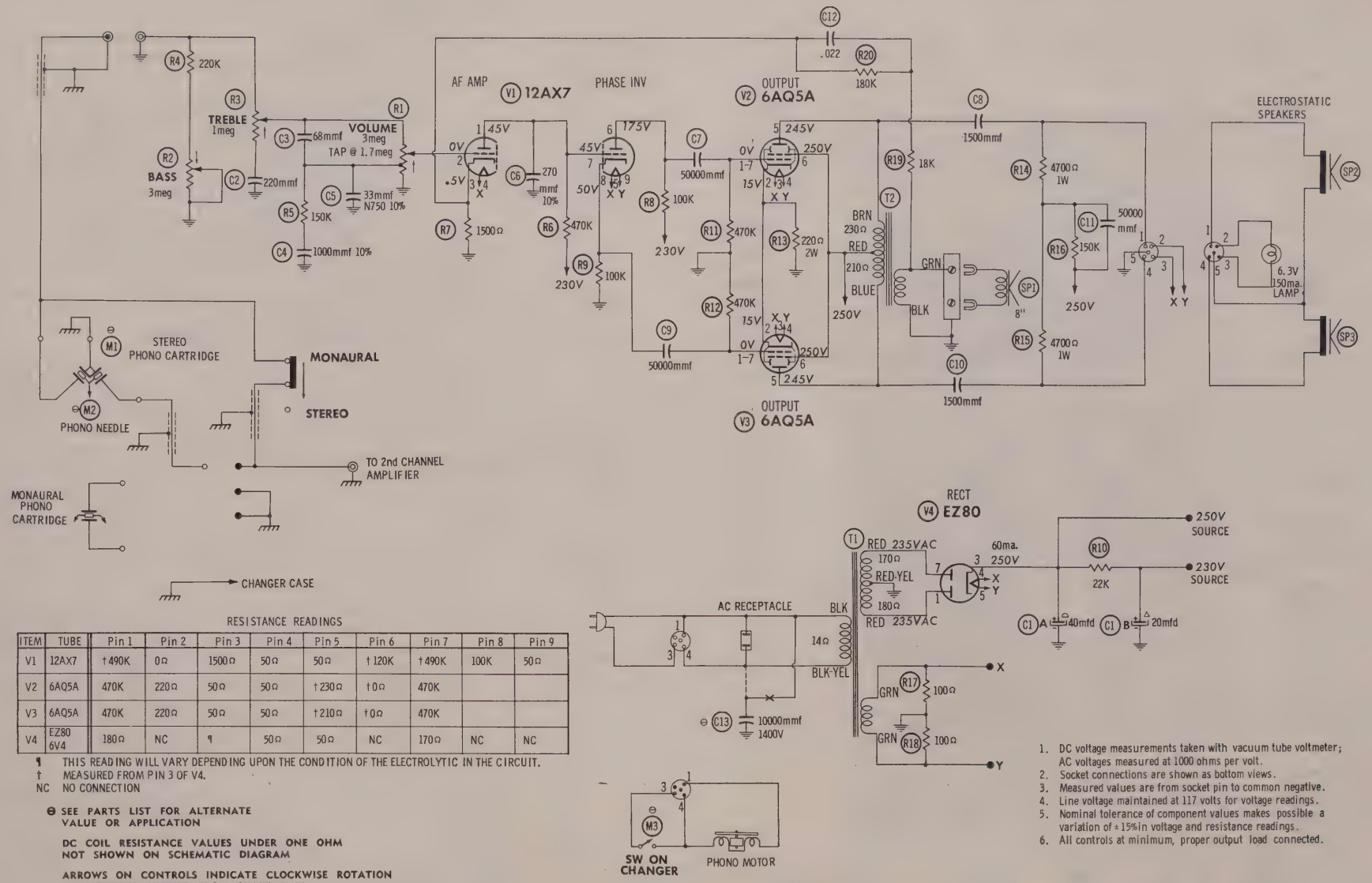
NAME	PART NO.	DESCRIPTION
Knob	45009522	Volume, Treble, & Bass (Phono Cabinet)
Knob	45009515	Off-On (Stereo Cabinet)
Knob	45009513	Volume (Stereo Cabinet)
Knob	45009512	Bass (Stereo Cabinet)
Knob	45009511	Treble (Stereo Cabinet)
Cabinet	33038481	Mahogany (Phono Cabinet)
Cabinet	33038482	Blond (Phono Cabinet)
Cabinet	33038483	Walnut (Phono Cabinet)
Cabinet	33038484	Fruitwood (Phono Cabinet)
Cabinet	33038511	Mahogany (Stereo Cabinet)
Cabinet	33038512	Blond (Stereo Cabinet)
Cabinet	33038513	Walnut (Stereo Cabinet)
Cabinet	33038514	Fruitwood (Stereo Cabinet)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†490K	0Ω	1500Ω	50Ω	50Ω	†120K	†490K	100K	50Ω
V2	6AQ5A	470K	220Ω	50Ω	50Ω	†230Ω	†0Ω	470K		
V3	6AQ5A	470K	220Ω	50Ω	50Ω	†210Ω	†0Ω	470K		
V4	EZ80 6V4	180Ω	NC	¶	50Ω	50Ω	NC	170Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V4.
NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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DUMONT CHASSIS RA-505

PHOTOFACT® Folder

EIA MEMBER

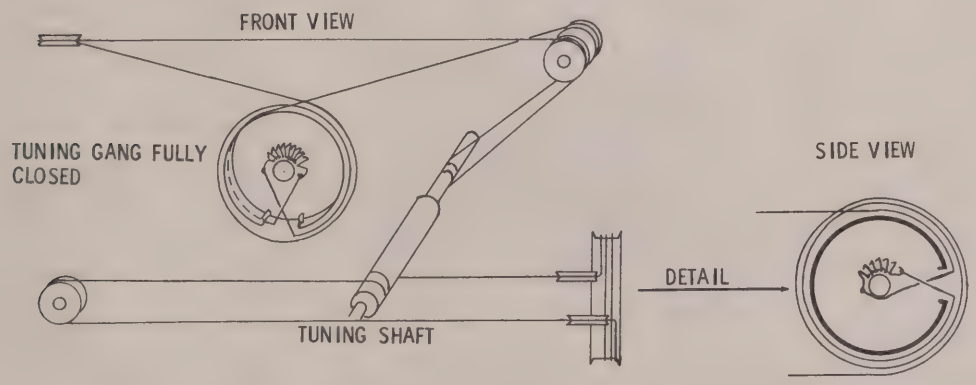
EMUD
MODEL T-7

EMUD
MODEL T-7

EMUD
MODEL T-7

TRADE NAME	Emud Model T-7		
IMPORTER	Delmonico International Corp., 42-24 Orchard Street, Long Island City 1, N. Y.		
TYPE SET	AC Operated 7 Tube FM-BC-SW Receiver		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	68 Watts, .65 Amp. @ 117 Volts AC (FM)
TUNING RANGES	BROADCAST 515-1620KC FREQ. MOD. 88-108MC	SHORT WAVE	5.9-10MC

DIAL CORD STRINGING

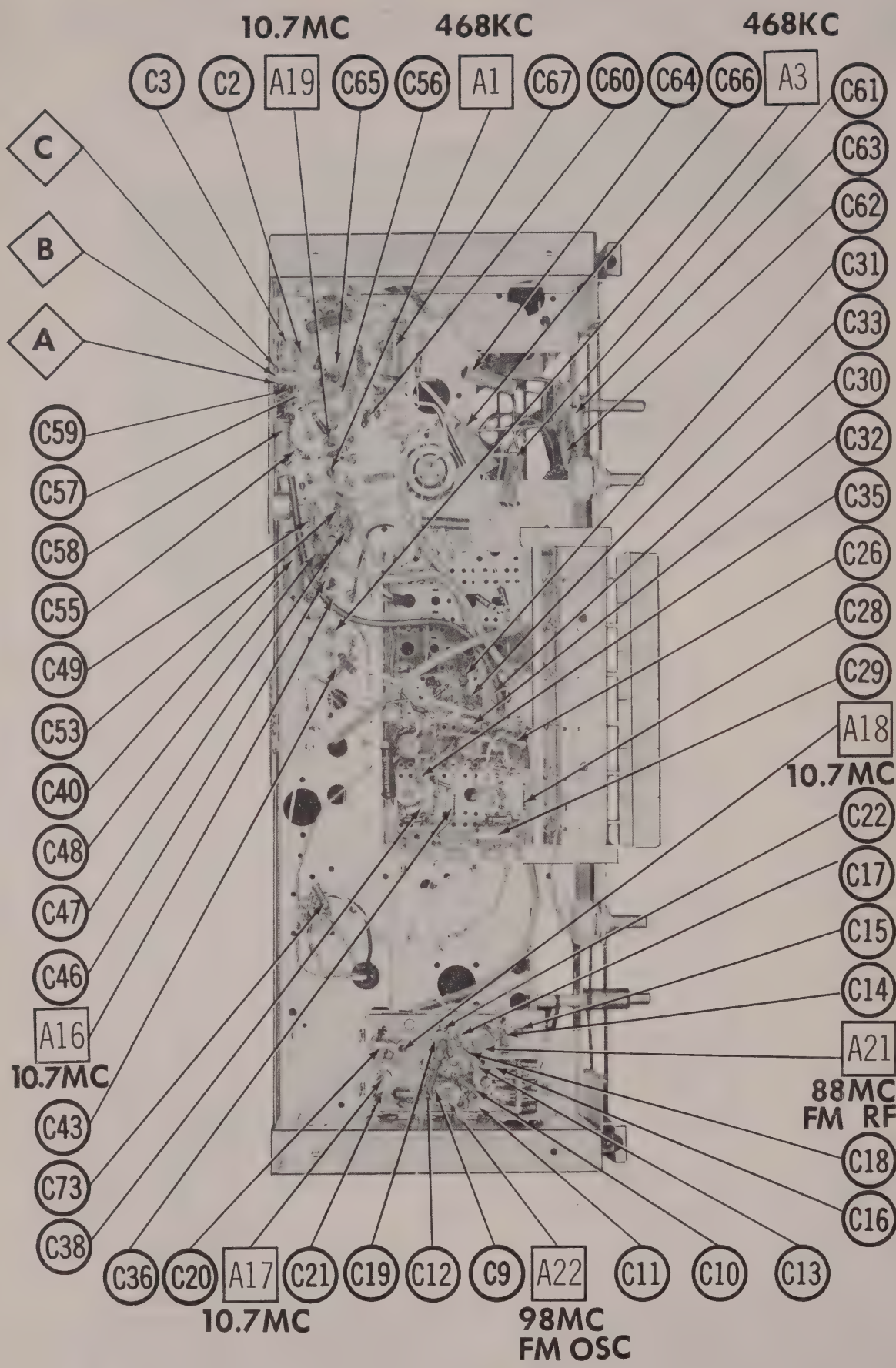


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

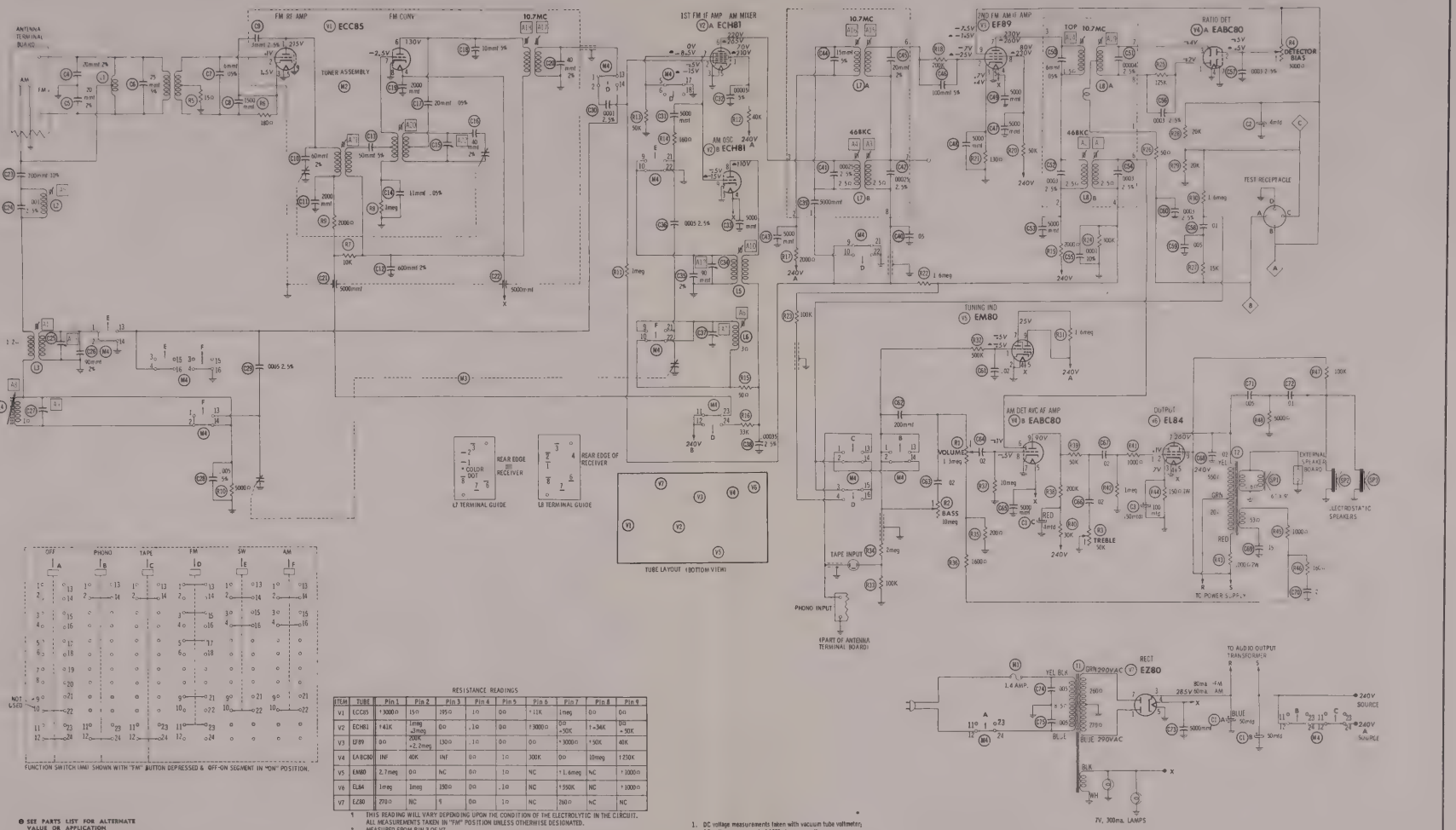
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JK408

SET 473 FOLDER 8



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†3000Ω	150Ω	295Ω	1Ω	0Ω	†11K	1meg	0Ω	0Ω
V2	ECH81	†41K	1meg ≠3meg 200K ≠2.2meg	0Ω	1Ω	0Ω	†3000Ω	0Ω ≠50K	†≠34K	0Ω ≠50K
V3	EF89	0Ω	0Ω	130Ω	1Ω	0Ω	0Ω	†3000Ω	†50K	40K
V4	EABC80	INF	40K	INF	0Ω	1Ω	300K	0Ω	10meg	†250K
V5	EM80	2.7meg	0Ω	NC	0Ω	1Ω	NC	†1.6meg	NC	†1000Ω
V6	EL84	1meg	1meg	150Ω	0Ω	1Ω	NC	†550K	NC	†1000Ω
V7	EZ80	270Ω	NC	¶	0Ω	1Ω	NC	260Ω	NC	NC

† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 3 OF V7.
≠ MEASURED IN "AM" POSITION.
NC NO CONNECTION.

MUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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EMIC
MODEL T-7

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A5, A6, A10, A11 ..... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537
A21 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

AM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	468KC (400∿ Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	High side to AM antenna plug. Low side to chassis.	"	"	"	"	A5	Adjust for MINIMUM output.
3.	Loop	515KC	"	Tuning gang fully closed	" "	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.	"	1620KC	"	Tuning gang fully open	"	A7	"
5.	"	600KC	"	Tune to 600KC signal	"	A8	Adjust for maximum while rocking tuning gang.
6.	"	1400KC	"	Tune to 1400KC signal	"	A9	"
7.	High side thru .001mfd to AM antenna. Low side to chassis.	5.9MC	SW	5.9MC	"	A10, A11	Adjust for maximum output.
8.	"	10MC	"	10MC	"	A12, A13	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe thru 100K to point Ⓐ. Common to chassis.	A14, A15, A16, A17, A18	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A19	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. thru 100K to point Ⓐ. Low side to chassis.	A14, A15, A16, A17, A18	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C2.
10.	"	"	"	"	Vert. Amp. thru 100K to point Ⓑ. Low side to chassis.	A19	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	Across FM antenna terminals.	108MC (Unmod.)	FM	108MC	DC probe thru 100K to point Ⓐ. Common to chassis.	A20	Adjust for maximum deflection.
12.	"	88MC	"	88MC	"	A21	"
13.	"	98MC	"	98MC	"	A22	Adjust for maximum deflection while rocking tuning gang.

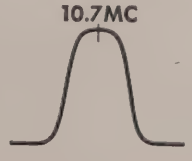


FIG. 1

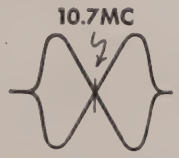
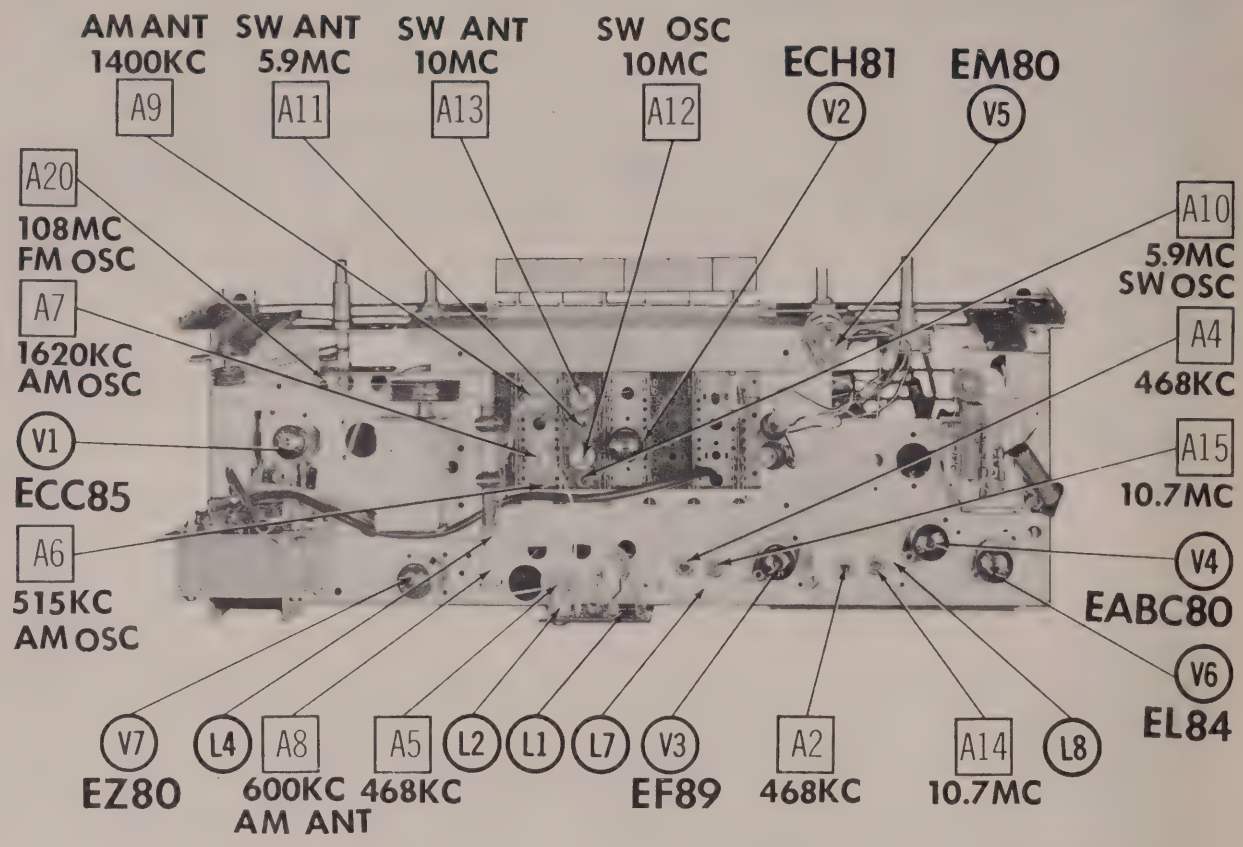
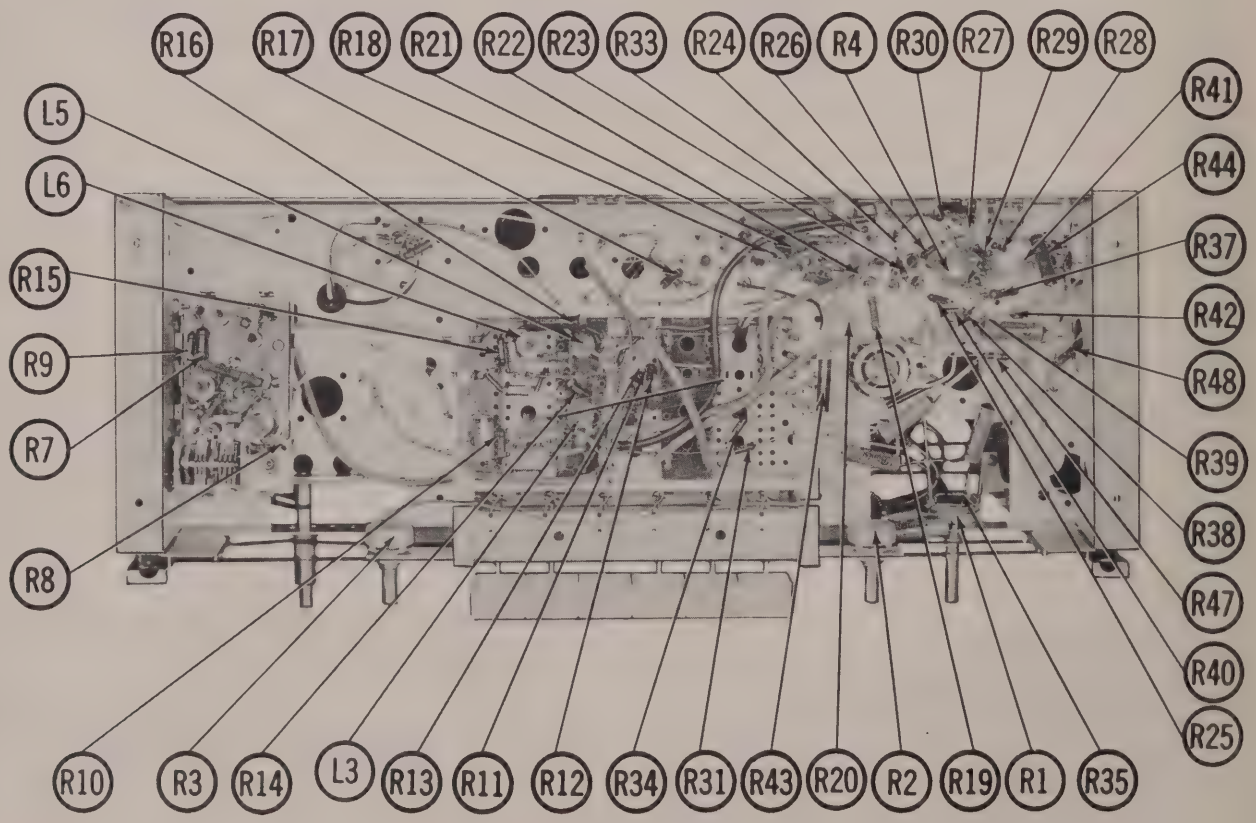


FIG. 2



CHASSIS TOP VIEW - ALIGNMENT, INDUCTOR & TUBE IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Conv.	ECC85
V2	1st FM IF Amp. - AM Mixer - AM Osc.	ECH81
V3	2nd FM IF Amp. - AM IF Amplifier	EF89
V4	Ratio Detector - AM Det. - AVC - AF Amplifier	EABC80
V5	Tuning Indicator	EM80
V6	Output	EL84
V7	Rectifier	EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	EMUD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	350			BBRT0235	WT460			
B	50	350							
C	4	350							
C2	4	100		SRE150V5	NLW5-100	TT150X4	TD-4-150	TE-1404	
C3	100	12		SRE12V100	BBR100-15	TT15X100	TD-100-15	TE-1160	Note 1

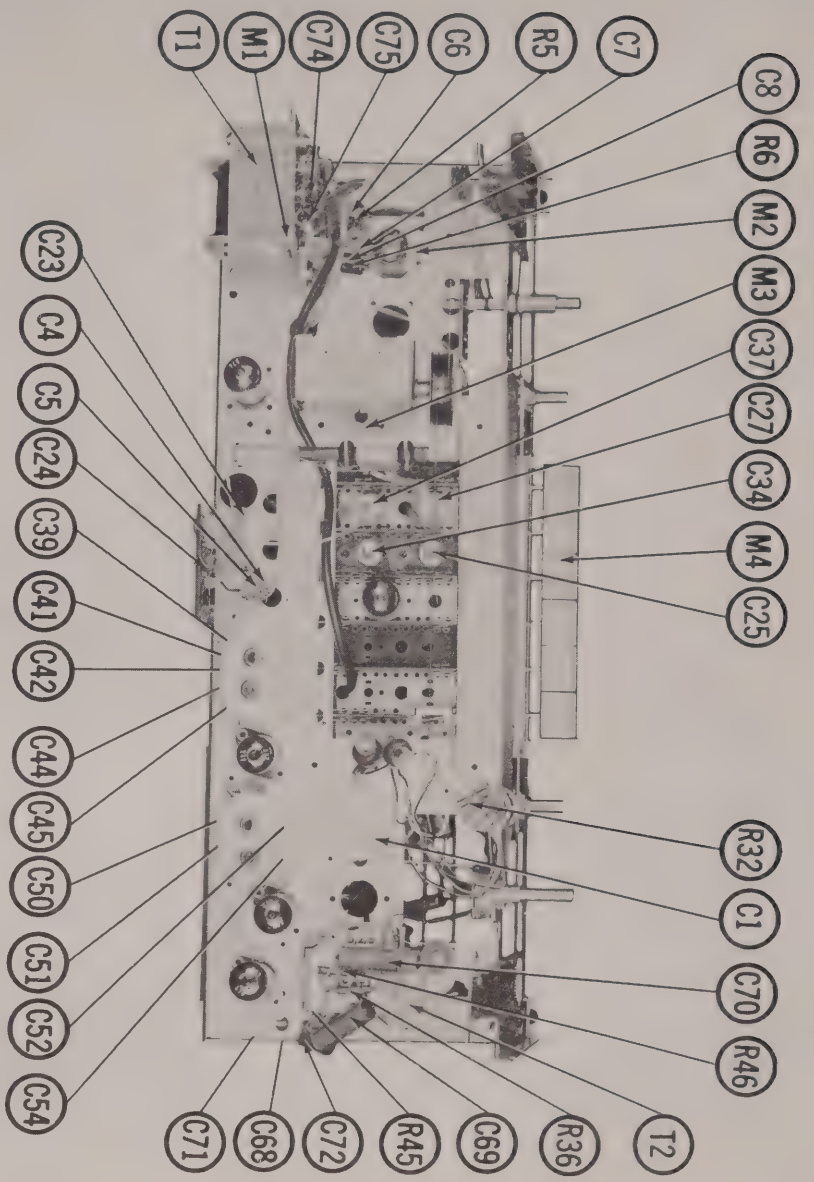
Note 1. Some versions may use 50 mfd in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	20 2%			TCZ-20				
C5	20 2%			TCZ-20				
C6	25 5%			TCZ-25			CNO-425	10TCC-Q25
C7	6 .05%							
C8	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C9	3 2.5%		NPO-DI 3.0	DTZ-3R3	C10V3C		CNO-533	
C10	60 2%			TCZ-62		CM-15-E-620G		
C11	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C12	600 2%					CM-20D-620G		
C13	50 5%			TCZ-50	C10Q5C	CM-20B-500J	CNO-450	10TCC-Q50
C14	11 .05%							
C15								
C16	40 2%			TCZ-39		CM-15-E-390G	MCE223	
C17	20 .05%							
C18	10 5%		NPO-SI 10	TCZ-10	C10Q1C	CM-20B-100J	CNO-410	10TCC-Q10
C19	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C20	40 2%			TCZ-39		CM-15-E-390G	MCE223	
C21	5000							
C22	5000							
C23	700 10%			DD-751	1R5T7	CM-20B-751K	GP375	10TS-T75
C24	.001 125V 2.5%					CM-20E-102G	MCE255	
C25								
C26	90 2%			TCZ-91		CM-15-E-910G		
C27								
C28	.005 125V 5%				5R5D5	CM-20B-502J	MCE465	MS-25
C29	.0005 500V 2.5%					CM-15-E-501G	MCE245	
C30	.0001 125V 2.5%			TCZ-100		CM-20E-101G	MCE235	
C31	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	.00005 500V 5%			TCZ-50	C10Q5C	CM-20B-500J	CNO-450	10TCC-Q50
C33	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C34								
C35	90 2%			TCZ-91		CM-15-E-910G		
C36	.0005 500V 2.5%					CM-15-E-501G	MCE245	
C37								
C38	.00035 500V 2.5%					CM-15-E-361G		
C39	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C40	.05 500V		P688N-05	DD-503	CUB6S5	6DP-3-503	GEM-615	6TM-S5
C41	.00025 125V 2.5%					CM-15-E-251G	MCE240	
C42	.00025 125V 2.5%					CM-15-E-251G	MCE240	
C43	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C44	15 5%			TCZ-15	C10Q15C	CM-20B-150J	CNO-415	10TCC-Q15
C45	20 2%			TCZ-20				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	100 5%			TCZ-100	C10T1C	CM-20B-101J	CNO-310	10TCC-T10
C47	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C48	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C49	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C50	6 .05%							
C51	.00004 125V 2.5%					CM-15-E-390G	MCE223	
C52	.0003 125V 2.5%					CM-15-E-301G	MCE241	
C53	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C54	.0003 125V 2.5%					CM-15-E-301G	MCE241	
C55	.0001 500V 10%			DD-101	L10T1	CM-20B-101K	GP310	10TS-T1
C56	.0003 125V 2.5%					CM-15-E-301G	MCE241	
C57	.0003 125V 2.5%					CM-15-E-301G	MCE241	
C58	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C59	.005 250V		P488N-005	D6-502	CUB4D5	6DP-1-502	GEM-625	6TM-D5
C60	.0003 125V 2.5%					CM-15-E-301G	MCE241	
C61	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S2
C62	200		SI 200	D6-201	L10T2	CCD-201		10TS-T20
C63	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S2
C64	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S2
C65	5000		BPD-005	D6-502	BYA10D5	CCD-502	B-250	5HK-D5
C66	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S2
C67	.02 500V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S2
C68	.002 500V		P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D2
C69	.15 250V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C70	.2 250V		P488N-2		CUB4P22	4DP-4-204	GEM-402	4TM-P2
C71	.005 500V		P688N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C72	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C73	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C74	.005 500V		P688N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5
C75	.005 500V		P688N-005	D6-502	CUB6D5	6DP-1-502	GEM-625	6TM-D5

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMUD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1.3meg	½	14	AB-70				Volume
B	Shaft			AK-29				
R2	10meg	½	2					Bass
R3	50K	½	3					Treble
R4	3000Ω	½						Detector Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	15Ω	
R6	180Ω	
R7	10K	
R8	1meg	
R9	2000Ω	
R10	5000Ω	
R11	1meg	
R12	40K	
R13	50K	
R14	160Ω	
R15	50Ω	
R16	33K	
R17	2000Ω	
R18	200K	
R19	2000Ω	

ITEM No.	RATING	REMARKS
R20	50K	
R21	130Ω	
R22	1.6meg	
R23	100K	
R24	300K	
R25	125K	
R26	50Ω	
R27	15K	
R28	20K	
R29	20K	
R30	1.6meg	
R31	1.6meg	
R32	500K	
R33	100K	
R34	2meg	

ITEM No.	RATING	REMARKS
R35	200Ω	
R36	1600Ω	
R37	10meg	
R38	200K	
R39	50K	
R40	30K	
R41	1000Ω	
R42	1meg	
R43	1000Ω 2W	
R44	150Ω 1W	
R45	1000Ω	
R46	160Ω	
R47	100K	
R48	5000Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		EMUD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Antenna Coil							
L2	IF Trap Coil							
L3	SW Antenna Trans.							
L4	Loopstick							
L5	SW Osc. Coil							
L6	AM Osc. Coil							
L7A	2nd FM IF Trans.							
B	1st AM IF Trans.							
L8A	Ratio Detector							
B	2nd AM IF Trans.							

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	EMUD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .65A	580VCT @ .080A	6.3V @ 3.6A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.1	EMUD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω	100Ω								
	Tap	SEC.2								
	@ 3%	5Ω								

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMUD PART No.	QUAM PART No.	
SP1	6" x 9"	PM	4-5Ω			
SP2	Electrostatic					
SP3	Electrostatic					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			EMUD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		1.4A 250V	713-20					

MISCELLANEOUS

ITEM No.	PART NAME	EMUD PART No.	NOTES
M2	RF Tuner		FM
M3	Tuning Cap.		AM, 2 Gang (Ant. 9-522mmf, Osc. 11-482mmf)
M4	Switch		Pushbutton Type, Includes Off-On, Phono, Tape, FM, SW, AM

WIRING DATA

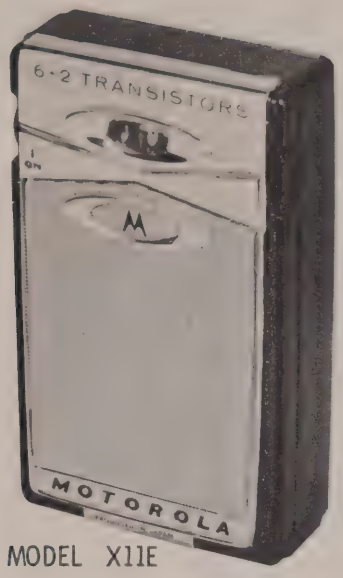
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

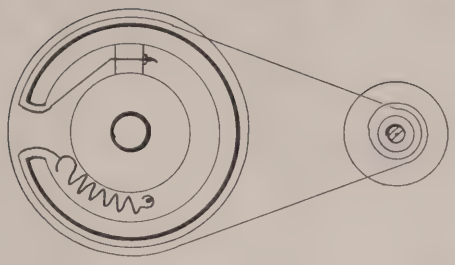
MOTOROLA MODELS X11B, E, G, R (Ch. HS-759) Early Versions

MOTOROLA MODELS X11B, E, G, R (Ch. HS-759) Early Versions



MODEL X11E

DIAL CORD STRINGING



TRADE NAME	Motorola Models X11B, X11E, X11G, X11R (Ch. HS-759) Early Versions
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	532 - 1620KC
RATING	4.5MA @ 9 Volts DC (No Signal, Min. Volume)
SHORT WAVE	14MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A5, A6 ..... GENERAL CEMENT #9087, 9089
WALSCO #2528

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	532KC	Tuning gang fully closed	"	A4	"
3.		"	1620KC	Tuning gang fully open	"	A5	Adjust for maximum output. Repeat steps 2 and 3 until oscillator covers required range.
4.		"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output.
5.		"	600KC	Tune to 600KC signal	"	A7	Adjust (by sliding antenna winding on ferrite core) for maximum output. Repeat steps 4 and 5.

DISASSEMBLY INSTRUCTIONS

1. Insert coin into slot on cabinet bottom and twist. Remove back.
2. Remove 2 chassis mounting screws (near X2 and X4).
3. Remove nut and spacer from earphone jack.
4. Remove cardboard strip from under battery.
5. Unsolder speaker leads.
6. Slide chassis to tuning knob side and lift up on volume knob side. Remove chassis.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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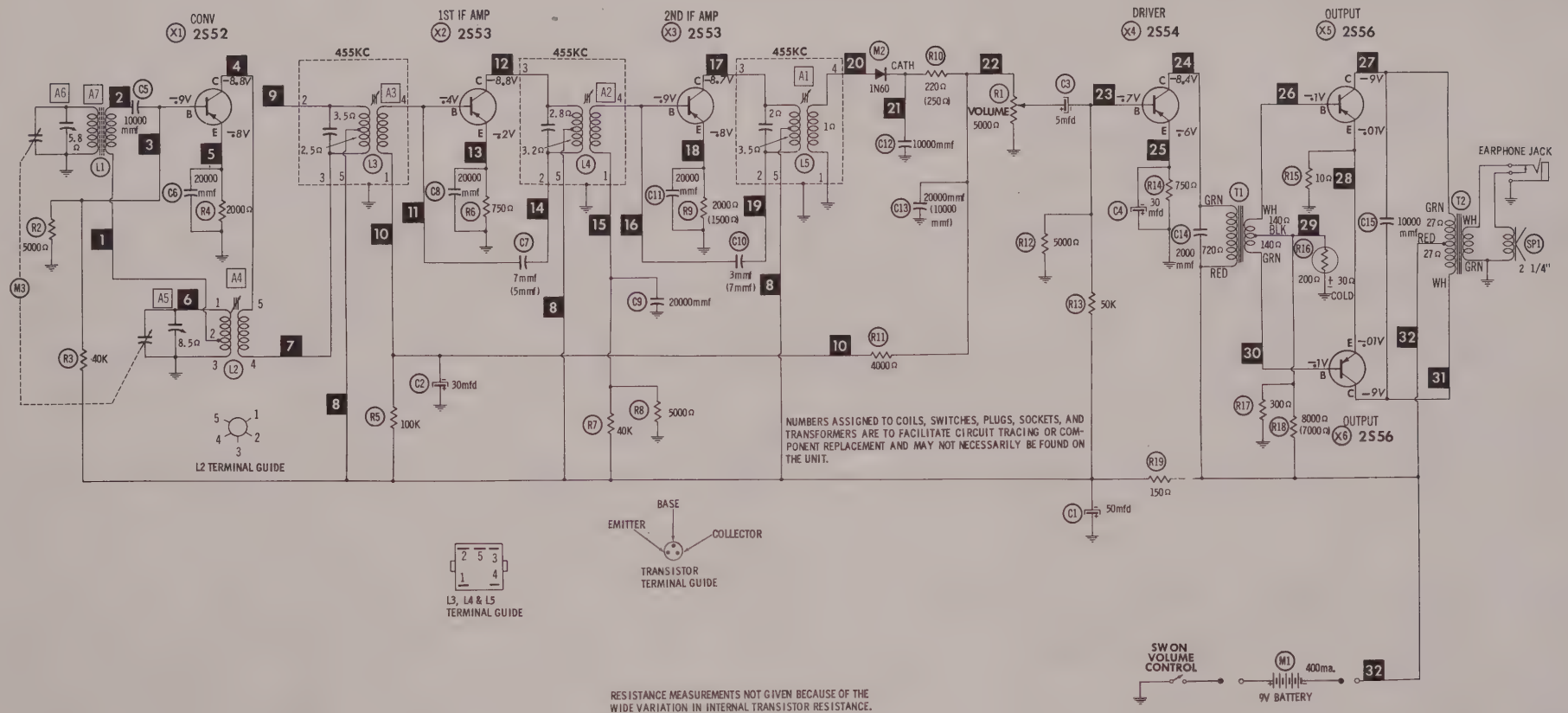
JF466

SET 473 FOLDER 9



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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MOTOROLA MODELS X11B, E, G, R (Ch. HS-759) Early Versions

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter		2N411	2N486	2N411	PNP
X2	2S53	1st IF Amplifier		2N409	2N483	2N409	PNP
X3	2S53	2nd IF Amplifier		2N409	2N483	2N409	PNP
X4	2S54	Driver		2N407	2N362	2N407	PNP
X5	2S56	Output		2N407	2N633	2N407	PNP } Matched
X6	2S56	Output		2N407	2N633	2N407	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	10	23K644671	XPP-10050	NLW50-10				
C2	30	3	23K644668	XPP-3030	NLW30-3		ML30-6	TE-1092	
C3	5	3	23K644669	XPP-3005	NLW5-6	TT6X5	ML5-6	TE-1052, 2	
C4	30	3	23K644668	XPP-3030	NLW30-3		ML30-6	TE-1092	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		C80V103AM	DM-103	H-05S1	CCD-103	TA-110	TG-S10
C6	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C7	7	(5mmf) *	NPO-DI 6, 8	DTZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TS-V68
C8	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C9	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C10	3	(7mmf) *	NPO-DI 3	DTZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TS-V33
C11	20000		C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C12	10000		C80V103AM	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C13	20000	(10000mmf)*	C80V203AM	DDM-203	H-05S2	CCD-203	TA-120	TG-S20
C14	2000		BPD-002	DM-202	L10D2	CCD-102	B-220	5GA-D2
C15	10000		C80V103AM	DM-103	H-05S1	CCD-103	TA-110	TG-S10

* Alternate Value

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	18K644694	B16-214				Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	5000Ω	
R3	40K	
R4	2000Ω	
R5	100K	
R6	750Ω	
R7	40K	

ITEM No.	RATING	REMARKS
R8	5000Ω	
R9	2000Ω	(1500Ω) *
R10	220Ω	(250Ω) *
R11	4000Ω	
R12	5000Ω	
R13	50K	

ITEM No.	RATING	REMARKS
R14	750Ω	
R15	10Ω	
R16	200Ω±30Ω Cold	#6K644680
R17	300Ω	
R18	8000Ω	(7000Ω) *
R19	150Ω	

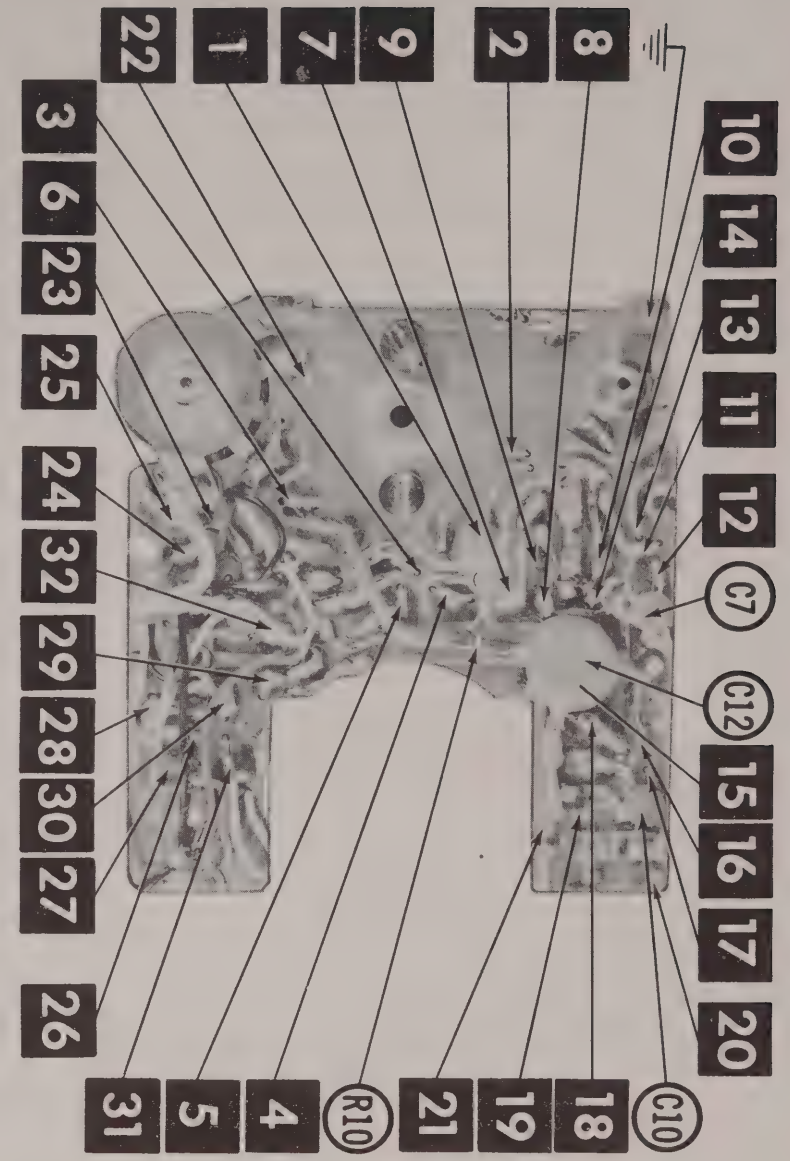
* Alternate

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MOTOROLA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	24K644674						
L2	Osc. Coil	24K644675						
L3	1st IF Trans.	24K644697						
L4	2nd IF Trans.	24K644698						
L5	3rd IF Trans.	24K644699						

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	25K644695	TR-40 ①			TR-40 ①		① Use original frame.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	300Ω CT	6-8Ω	25K644696	TR-47 ①				TR-47 ①		① Use original frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω	50K644682		

BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	48K644681	1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuning Cap. Printed Board	19K644665 84K644664	2 Gang Less all components

CABINETS & CABINET PARTS

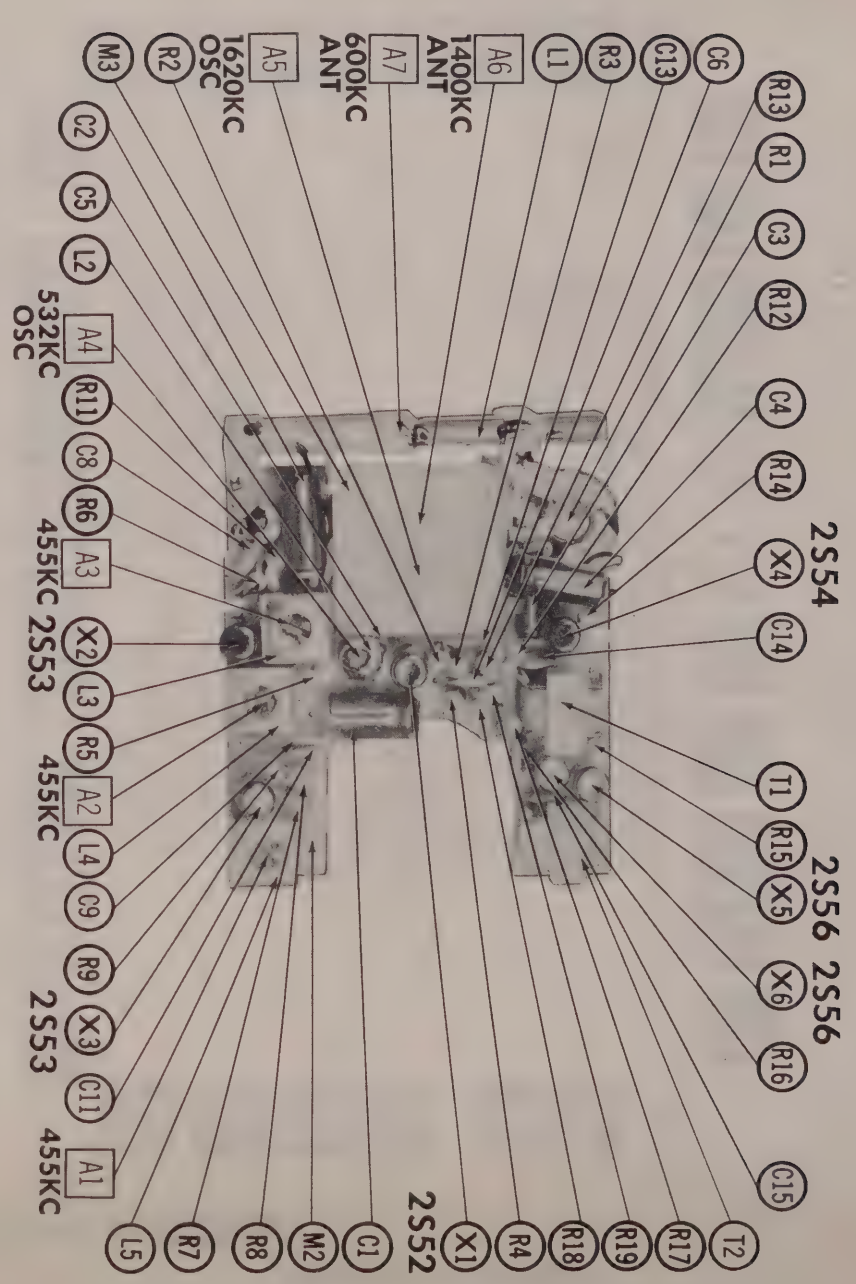
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	13K645006	
Knob	36K644709	Tuning
Knob	36K644710	Off-On Volume
Cabinet Back	1K645041	Model X11B
Cabinet Back	1K645042	Model X11E
Cabinet Back	1K645043	Model X11G
Cabinet Back	1K645044	Model X11R
Cabinet Front	1K644116	Model X11B, (Includes Escutcheon, Dial Lens, & Lens Holder
Cabinet Front	1K644117	Model X11E, (Includes Escutcheon, Dial Lens, & Lens Holder
Cabinet Front	1K644118	Model X11G, (Includes Escutcheon, Dial Lens, & Lens Holder
Cabinet Front	1K644119	Model X11R, (Includes Escutcheon, Dial Lens, & Lens Holder

WIRING DATA

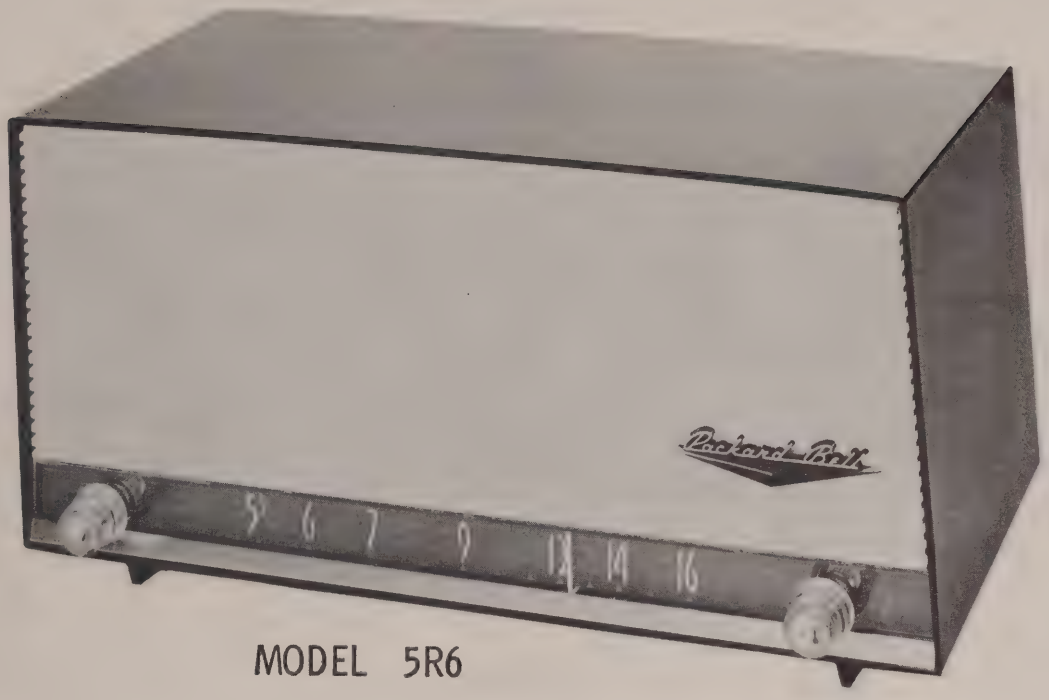
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

PACKARD-BELL
MODELS 5RC7, 5R6



MODEL 5R6

PACKARD-BELL
MODELS 5RC7, 5R6

TRADE NAME	Packard Bell Models 5R6, 5RC7
MANUFACTURER	Packard Bell Electronics Corp., Service Div., 1920 S. Figueroa St., Los Angeles 7, California
TYPE SET	AC Operated 5 Tube AM Receiver (Model 5RC7 is a clock version)
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 24 Watts, .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5, A6.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC Signal	"	A6	Adjust for maximum output while rocking tuning gang.

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JG586

SET 473 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	24073	PRS2210	BBRD5515	WD215	TDLD-9	TVA-2453	
B	50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C3	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C4	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	10TS-T22
C5	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C10	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500K	½	25047				PP55A	Volume & Switch①

① Switch is for night light in Model 5RC7.

RESISTORS

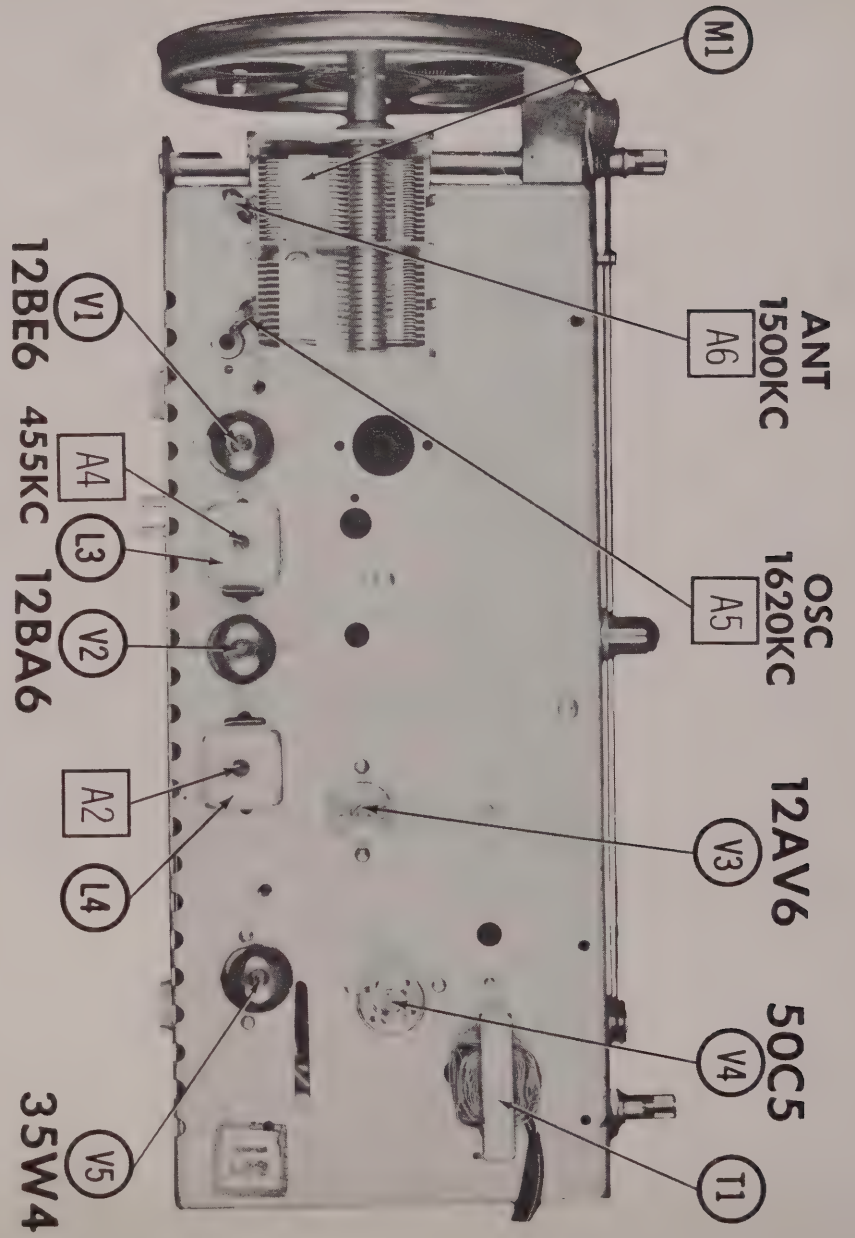
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	22K	
R3	68Ω	
R4	2.2meg	
R5	220K	
R6	4.7meg	
R7	470K	
R8	150Ω	
R9	1000Ω 1W	
R10	68Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Packard-Bell PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loopstick	29358						
L2	Osc. Coil	29229B	14-1073	14-1073	BC-393	69-OSC		
L3	Inout IF	29077	16-6758	16-6758	BC-352	12-C1	RF-1	
L4	Output IF	29078	16-6758	16-6758	BC-353	12-C2	RF-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	89417A	26S58	A-3025	AU-605	A-3332	26S58	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	83014	4A07	Model 5R6
	3"	PM	3-4Ω	83120		Model 5RC7

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M1	Tuning Cap.	23550A	2 Gang (Ant. 42—488mmf, Osc. 32—177mmf)

CABINETS & CABINET PARTS

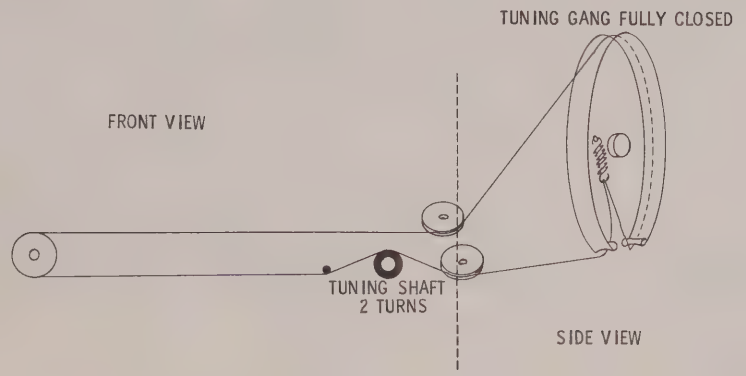
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52227	Tuning, Volume
Knob	52226B	Control or Sleep Switch, Model 5RC7
Dial Pointer	67045	

WIRING DATA

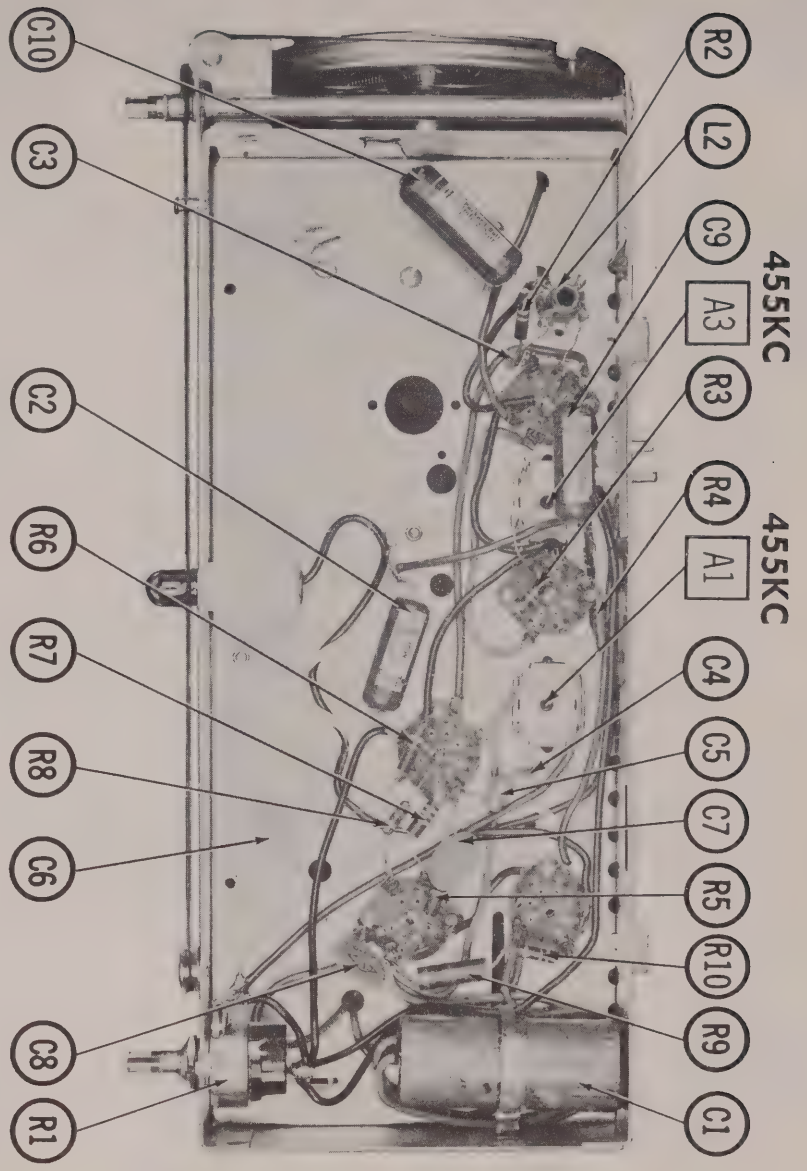
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

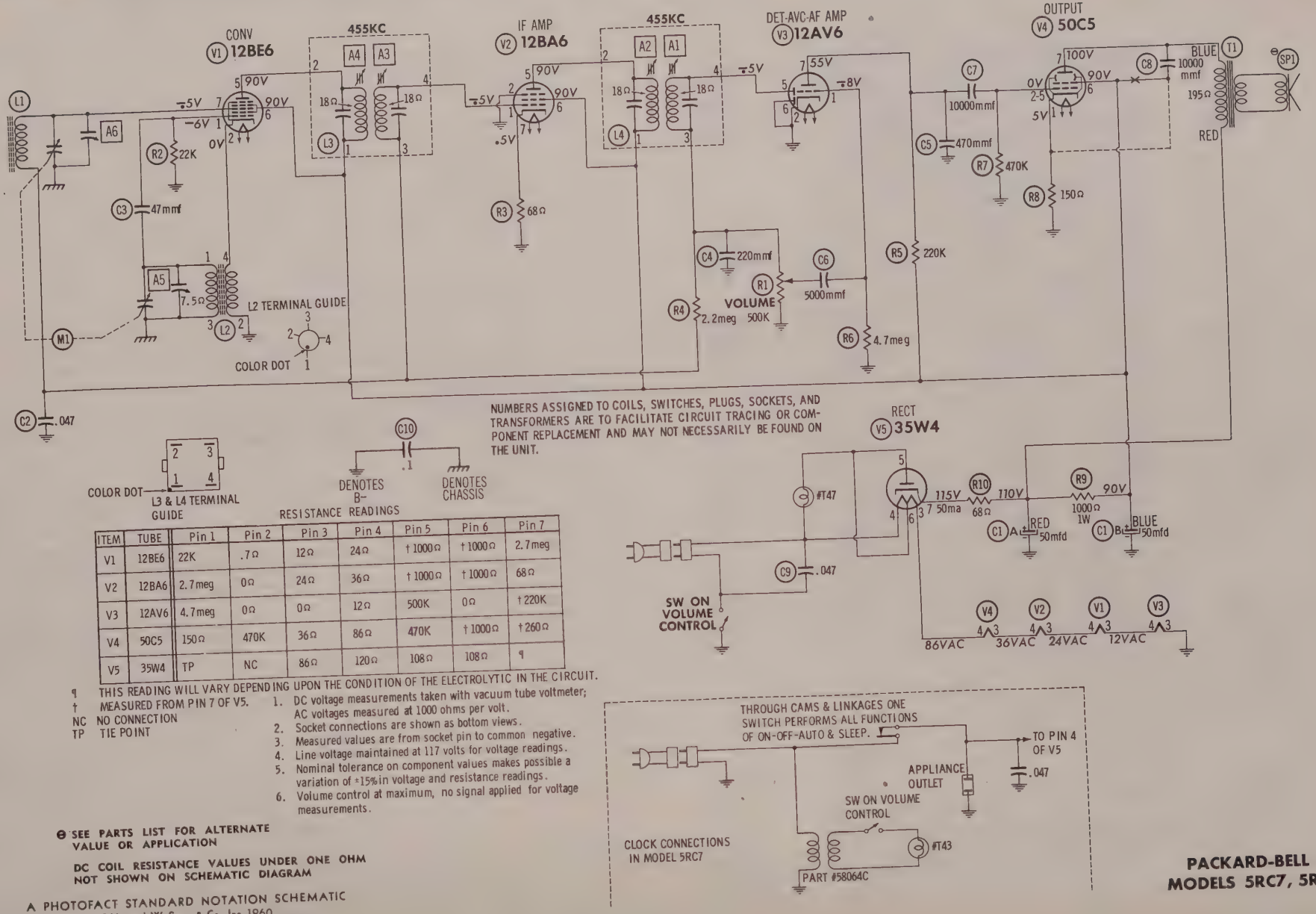
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.7Ω	12Ω	24Ω	†1000Ω	†1000Ω	2.7meg
V2	12BA6	2.7meg	0Ω	24Ω	36Ω	†1000Ω	†1000Ω	68Ω
V3	12AV6	4.7meg	0Ω	0Ω	12Ω	500K	0Ω	†220K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1000Ω	†260Ω
V5	35W4	TP	NC	86Ω	120Ω	108Ω	108Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

THROUGH CAMS & LINKAGES ONE SWITCH PERFORMS ALL FUNCTIONS OF ON-OFF-AUTO & SLEEP.
TO PIN 4 OF V5
.047
APPLIANCE OUTLET
SW ON VOLUME CONTROL
#T43
CLOCK CONNECTIONS IN MODEL 5RC7
PART #58064C

PACKARD-BELL MODELS 5RC7, 5R6

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHOTOFACT® Folder with CIRCUITRACE*

**PHILCO MODEL
T-78 (Code 124, 126)**

PHILCO MODEL
T-78 (Code 124, 126)

TRADE NAME	Philco Model T-78 (Codes 124, 126)
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	535 - 1620KC
RATING	14MA @ 6 Volts DC (No Signal, Min. Volume) 25MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1620KC	Tuning gang fully open	"	A6	"
4.		"	1400KC	Tune to 1400KC signal	"	A7	Adjust for maximum output while rocking tuning gang. Repeat steps 2, 3 and 4.

NOTE: IF HARMONIC WHISTLE IS ENCOUNTERED, REPOSITION C11. IN CHASSIS WITH C11 DRESSED NEAR R15 AND X4, DO NOT DISTURB THE POSITION

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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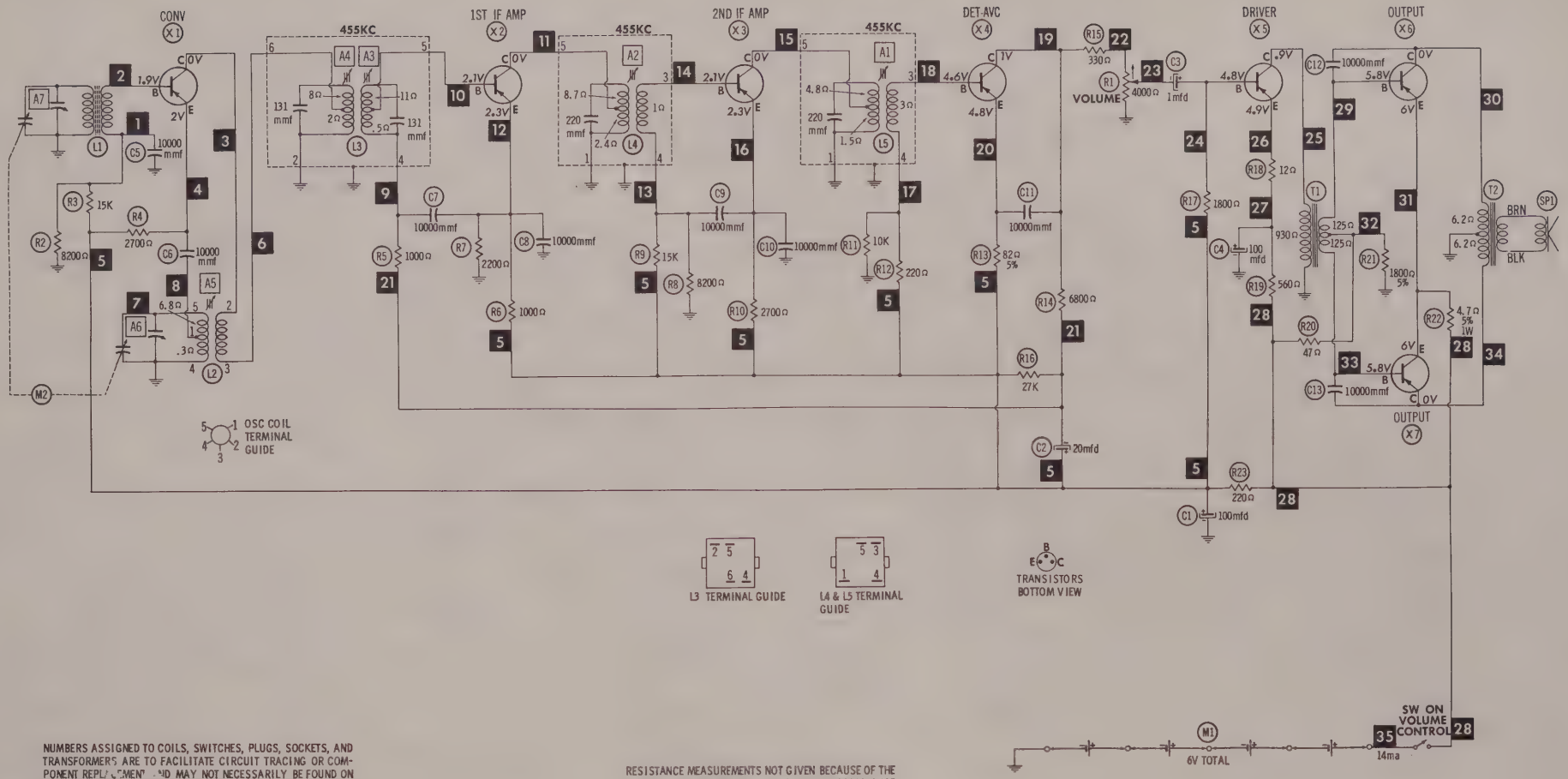
SET 473 FOLDER 11



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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PHILCO MODEL T-78 (Code 124, 126)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1033	Converter			2N486		PNP
X2	T1233	1st IF Amplifier			2N483		PNP
X3	T1232	2nd IF Amplifier			2N483		PNP
X4	T1033	Detector			2N362		PNP
X5	T1001 ①	Driver		2N406	2N362	2N406	PNP
X6	T1007 ②	Output		2N408	2N632	2N408	PNP } Matched Pair
X7	T1007 ②	Output		2N408	2N632	2N408	PNP } Matched Pair

① Code 126 uses a T1000 in this application.

② Code 126 uses a T1008 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	6	30-2588-4	SRE6V100	BBR100-6	TT6X100	TD-100-6	TVA-1101	
C2	20	6	30-2588-1	PWE6020	EC20-6	TT15X20	ML20-6	TE-1090	
C3	1	6	30-2591-5	XPP-6001	EC1-6	TT12X1	ML1-6	TE-1080	
C4	100	6	30-2588-4	SRE6V100	BBR100-6	TT6X100	TD-100-6	TVA-1101	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	4000Ω	½	33-5575-10					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	8200Ω	
R3	15K	
R4	2700Ω	
R5	1000Ω	
R6	1000Ω	
R7	2200Ω	
R8	8200Ω	
R9	15K	

ITEM No.	RATING	REMARKS
R10	2700Ω	
R11	10K	
R12	220Ω	
R13	82Ω 5%	
R14	6800Ω	
R15	330Ω	
R16	27K	
R17	1800Ω	

ITEM No.	RATING	REMARKS
R18	12Ω	
R19	560Ω	
R20	47Ω	
R21	1800Ω 5%	
R22	4.7Ω 5% 1W	
R23	220Ω	

PRINTED BOARD

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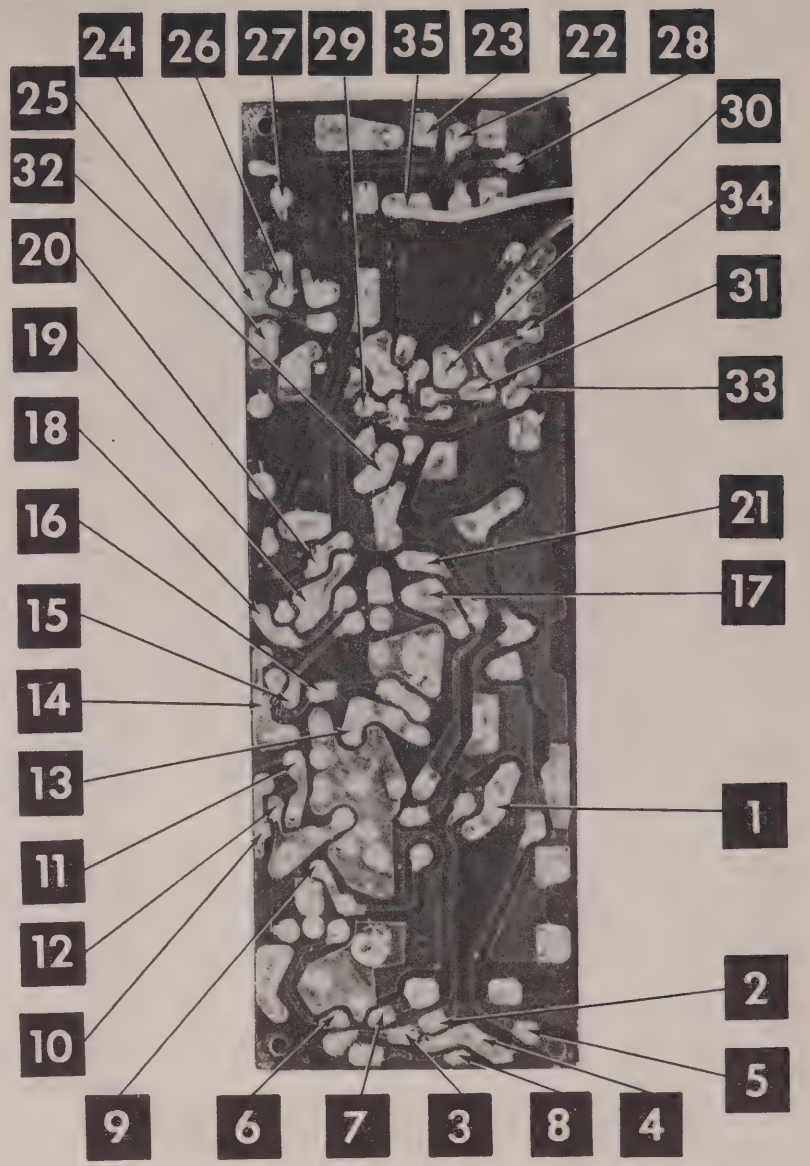


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	32-4668-1						
L2	Osc. Coil	32-4669-2						
L3	1st IF Trans.	32-4738-1						
L4	2nd IF Trans.	32-4738-2						
L5	3rd IF Trans.	32-4738-3						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	32-8813						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	185Ω	3-4Ω	32-8812-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	36-1654-20	4A1	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			130		635		M-14R	Four required

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuning Cap. Printed Board	31-2790-4 54-6497	2 Gang

CABINETS & CABINET PARTS

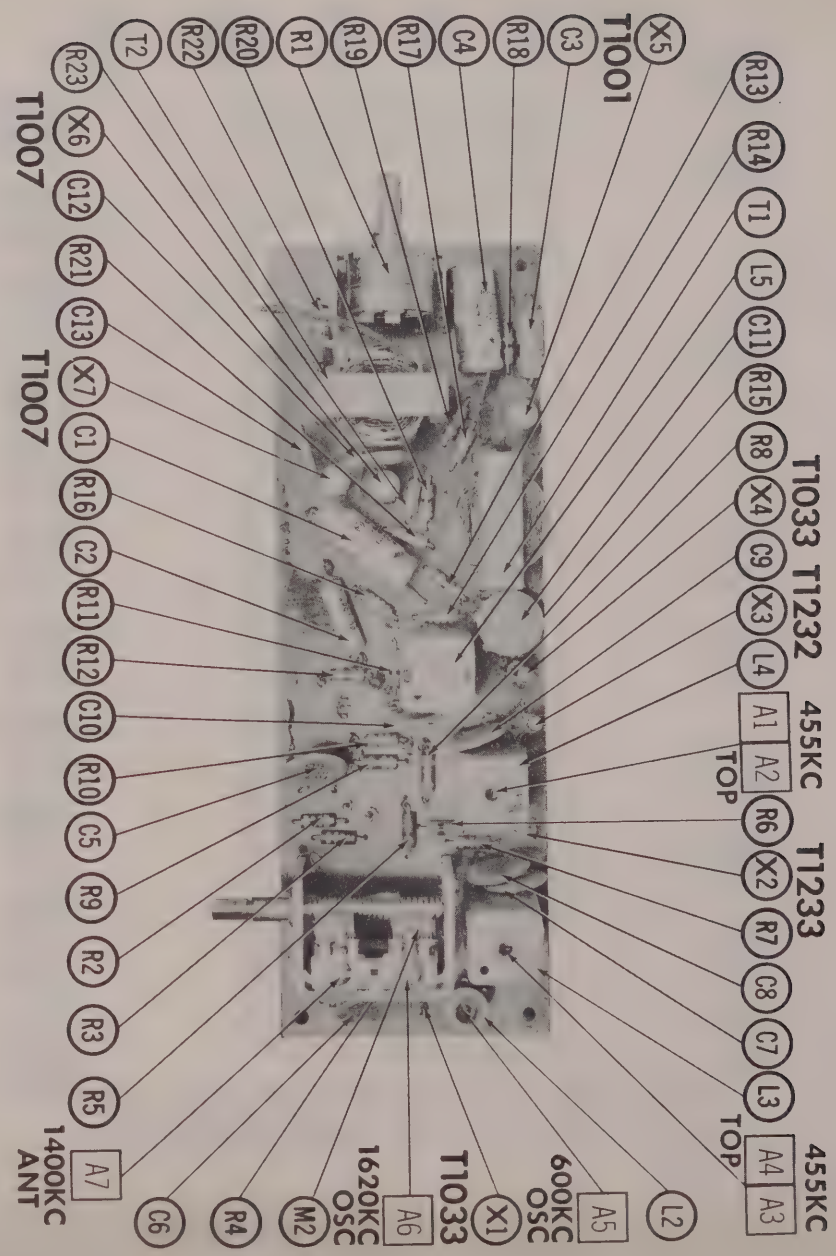
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6959-1	Tuning
Knob	54-6959-2	Volume
Dial	54-5458	
Cabinet	51-0080	Briarwood

WIRING DATA

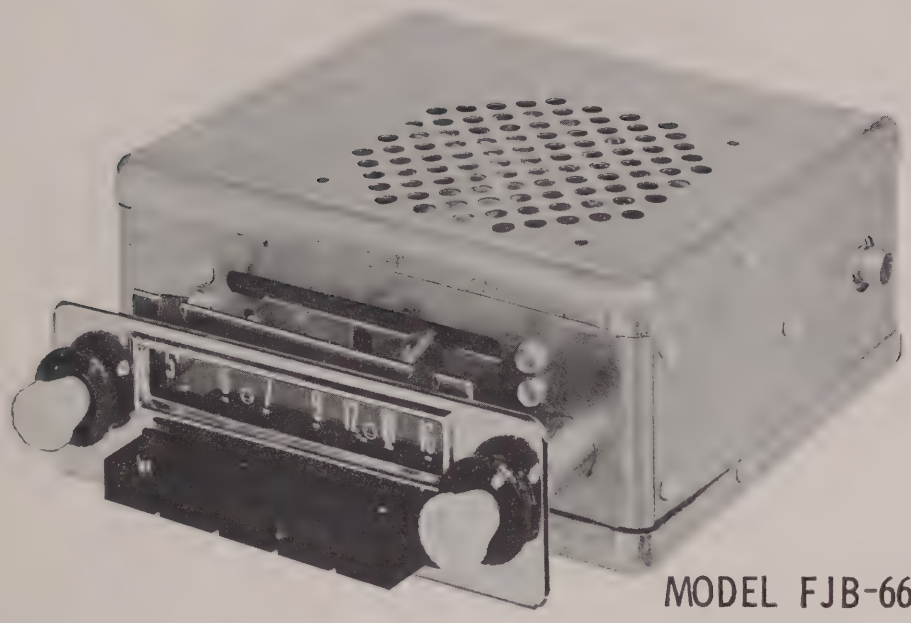
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

RIVERSIDE MODELS
FJB-6691B, FJB-6693B



MODEL FJB-6691B

RIVERSIDE MODELS
FJB-6691B, FJB-6693B

TRADE NAME	Riverside Models FJB-6691 (Pushbutton), FJB-6693 (Manu... or Renault Dauphine Automobiles
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Battery Operated 6 Tube AM Automobile Receiver
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	538-1610KC
RATING	5.5 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A1 thru A4.....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5 thru A7.....GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

* Pushbutton models use 265KC (400∿ Mod.); Manual tuning models use 455KC (400∿ Mod.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	See Note *	1610KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1610KC	"	"	A5	"
3.	68mmf	High side to antenna receptacle. Low side to chassis.	"	"	"	A6, A7	"

With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.

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JD473

SET 473 FOLDER 12

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆		GENERAL ELECTRIC ◆		RAYTHEON ◆		SYLVANIA ◆	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	6BA6	V4	Detector-AVC-AF Amp.	6AV6 (6AT6*)
V2	Converter	6BE6	V5	Output	6AQ5
V3	IF Amplifier	6BA6	V6	Rectifier	6X4

* Alternate Value

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RIVERSIDE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■20	350	20-86S	AFH3-107	C0800	FP329.5	TMT-92	TVL-3635	
B	▲20	350							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	100		1468-0001	DD-101	5W5T1	CM-20B-101M	MC-235	MS-31
C3	5000 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C4		#28-800						
C5	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C6	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C7A B		#28-2-281 †						
C8	5 NPO		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-4R7	CNO-547	10TCC-V50
C9	40		NPO-DI 39	TCZ-39	C10Q39	CCTO-390	CNO-439	10TCC-Q39
C10	51	(270mmf) *	NPO-DI 51	TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C11	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	.01 600V		P688N-01	DD-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C14	.04 1000V		P1088N-04	DD-403	CUB16S4	16DP-5-403	GEM-1014	MB-S4
C15	.25 100V	Note 1	P288N-25		CUB2P25	1DP-3-254	GEM-2025	2TM-P25
C16	.5 50V		P288N-5		CUB2P5	2DP-5-504	GEM-205	2TM-P5
C17	.47 100V	Note 1	P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47

\# Riverside Part Number.
* Alternate Value.
Note 1. Not used in some versions.
† Manual Tuning sets use Part #28-2-3 in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RIVERSIDE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	1/2 watt	80-531A					Tone Note 1
B	500K*							Volume Note 1
C	Switch							

Note 1. Some versions may use 500K Volume & switch, Less Tone (Part #80A531).
* Tap at 170K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

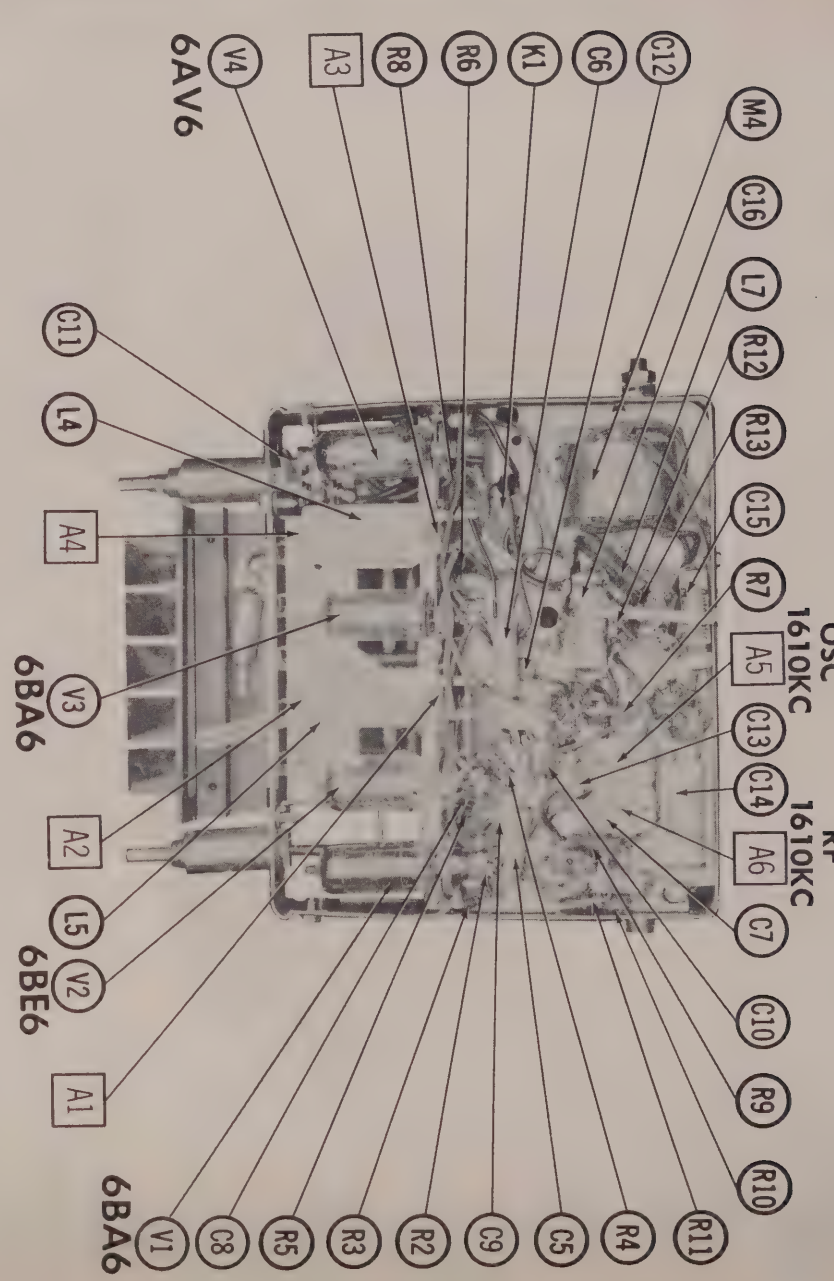
ITEM No.	RATING	REMARKS
R2	470K	
R3	330Ω	(220Ω) *
R4	150K	
R5	47K	

ITEM No.	RATING	REMARKS
R6	820Ω	
R7	3.3meg	Note 1
R8	2.2meg	
R9	270Ω 1W	(330Ω) *

ITEM No.	RATING	REMARKS
R10	6800Ω 2W	
R11	1000Ω 1W	
R12	68Ω	(82Ω) *
R13	68Ω	(82Ω) *
R14	68K	Note 1

* Alternate value.
Note 1. Not used in some versions.

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RIVERSIDE PART No.	REPLACEMENT DATA	
K1	Detector-Audio Coupling	220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg		Aerovox Centralab Cornell-Dubilier Mallory Sprague	PA-113-2 PC-151 116TM2 MS-107 DT-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RIVERSIDE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	†						
L2	RF Coil	†						
L3	Osc. Coil	†						
L4	Input IF	14-265X	16-6752	16-6752	BC-350	12-H1	RF-3	①
L5	Output IF	14-265X	16-6752	16-6752	BC-351	12-H2	RF-3	①
L6	"A" Lead Choke							1.2uh②
L7	Hash Choke	14-205						18.5uh

† Part of M3.
① Manually tuned sets use Part #14-1655-6.
② Not used in some versions.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	RIVERSIDE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	6 VCT @2.7A	430 VCT @.040A		76-600-6	22R63				22R63	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	RIVERSIDE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5200Ω	3-4Ω	75-4502	24S51	A-2930	AU-601	A-3850	24S51	S-3X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RIVERSIDE PART No.	QUAM PART No.	
SP1	5"x 7"	PM	3-4Ω	73-655	57A1	

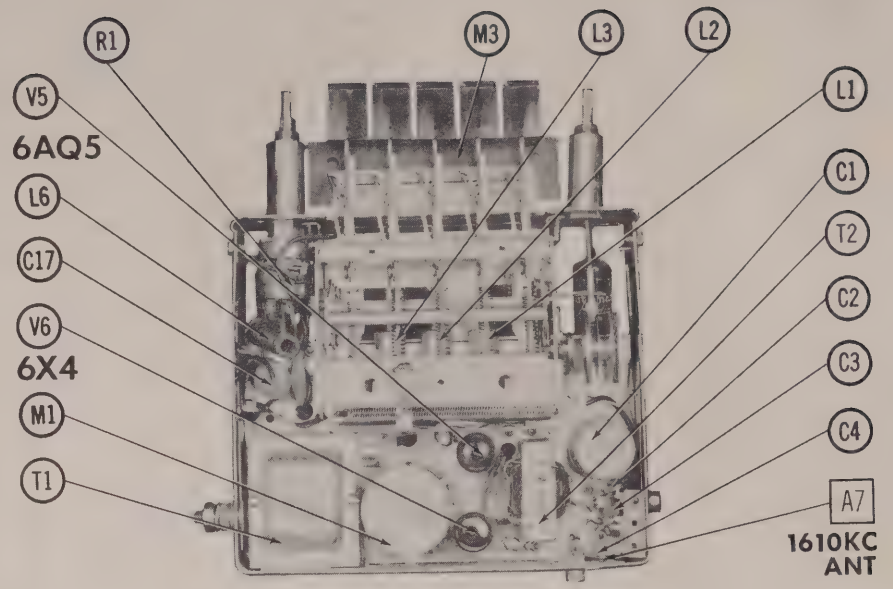
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				RIVERSIDE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	113-83	5715	4501	5715	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RIVERSIDE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A 32V	108-200		307014 (SFE 14A 32V)	155014	SFE14	HH1

CHASSIS—TOP VIEW



MISCELLANEOUS

ITEM No.	PART NAME	RIVERSIDE PART No.	NOTES
M3	Tuner	78-700	Pushbutton, Model FJB-6691B
	Tuner	78-4712	Manual, Model FJB-6693B (not used in some versions)
M4	Spark Plate		

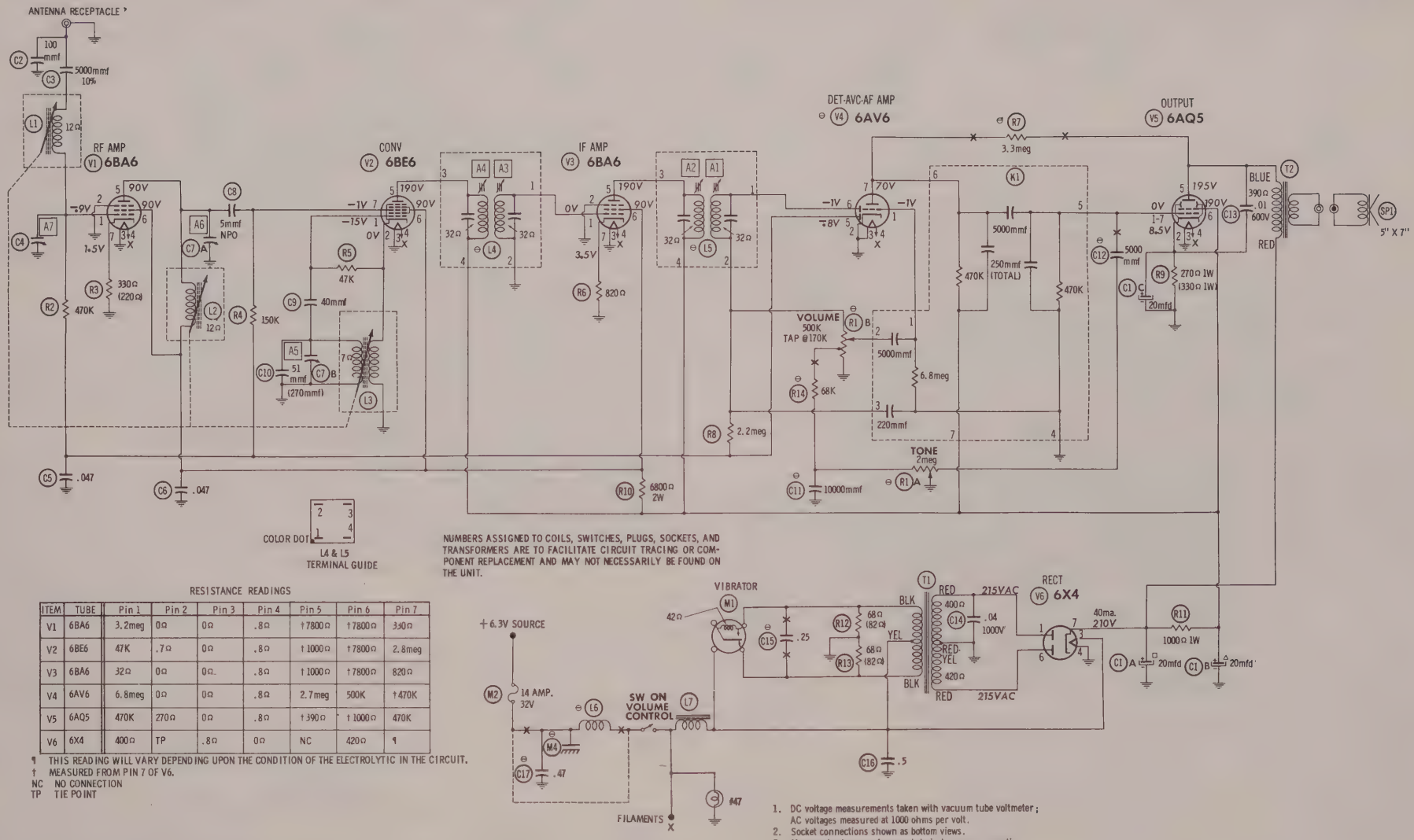
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	47B319-2W	Control
Knob	47B393	Tone
Knob	47B393-1	Dummy
Dial Scale	39A575	Model FJB-6691B
Dial Scale	39A575-1	Model FJB-6693B

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BA6	3.2meg	0Ω	0Ω	.8Ω	†7800Ω	†7800Ω	330Ω
V2	6BE6	47K	.7Ω	0Ω	.8Ω	†1000Ω	†7800Ω	2.8meg
V3	6BA6	32Ω	0Ω	0Ω	.8Ω	†1000Ω	†7800Ω	820Ω
V4	6AV6	6.8meg	0Ω	0Ω	.8Ω	2.7meg	500K	†470K
V5	6AQ5	470K	270Ω	0Ω	.8Ω	†390Ω	†1000Ω	470K
V6	6X4	400Ω	TP	.8Ω	0Ω	NC	420Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V6.
NC NO CONNECTION
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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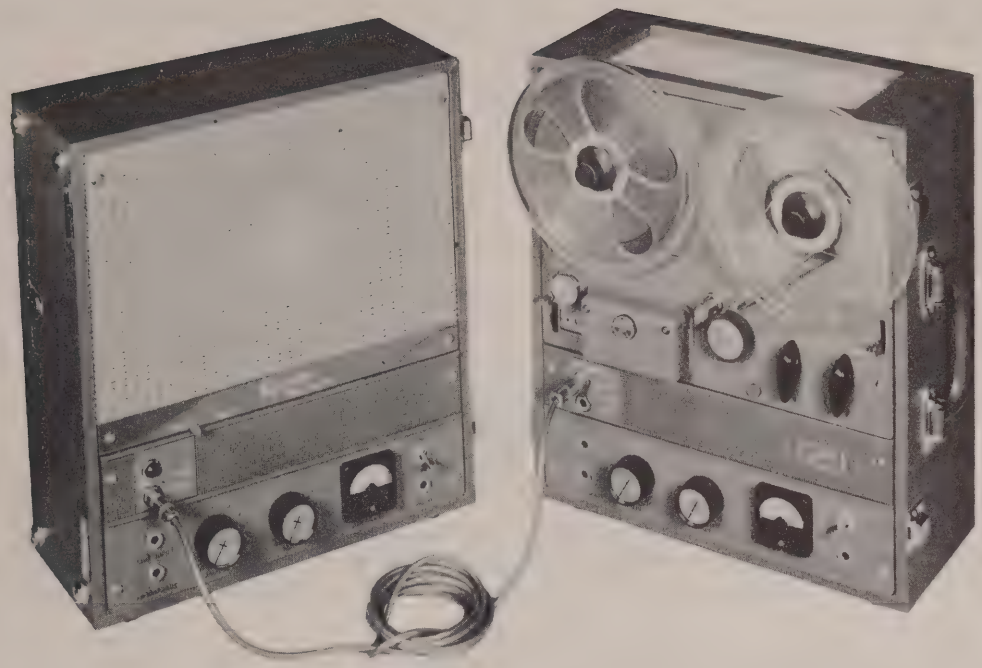
RIVERSIDE MODELS
FJB-5691B, FJB-6693B

PHOTOFACT® Folder



GENERAL INFORMATION

Roberts Models 90, 90-S, and 90-C tape recorders consist of two basic sections -- a tape-transport mechanism and a record-playback amplifier.

The Model 90 is a monaural tape recorder. Models 90-S and 90-C are stereo tape recorders. Stereo can be recorded by connecting a Roberts Model A-901 stereo amplifier to jack 2 on the stereo tape recorders. On the Model 90-C, a preamplifier is included for the lower channel.

The mechanical controls are interlocked to prevent accidental selection of an incorrect operating mode.

The Roberts tape recorders have two speeds, 7 1/2 and 3 3/4 ips. With both monaural tracks, the recording times are as follows:

Reel Size	3 3/4 Ips	7 1/2 Ips
5" (600 ft.)	1 Hour	1/2 Hour
7" (1200 ft.)	2 Hours	1 Hour

These models are designed to operate on 60 cycles, 110-120 volts AC only.

Supplied by:

Roberts Electronics, Inc.
1028 North La Brea Avenue
Hollywood 38, California

This material compiled and published by

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CQ407

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ROBERTS MODELS A-901,
90, 90-C, 90-S

ROBERTS MODELS A-901,
90, 90-C, 90-S

SET 473 FOLDER 13

PREPARING FOR OPERATION

1. Remove lid from carrying case.
2. Remove microphone and AC supply cord from storage compartment on left side of carrying case.
3. Make certain all controls are in the Stop position.

FUNCTIONS OF CONTROLS

On-Off Switch

On the Model 90, this is a 2-position switch. When it is in the On position, power is turned on to the amplifier and tape deck. On the Models 90-S and 90-C, it is a 3-position switch. When the switch is pushed to the All On position, power is turned on to the amplifier and tape deck. When it is in the Amp Off position, power is applied to the tape deck only. The Off position turns the power off to the entire unit.

Volume

Turning this control clockwise increases the volume in either record or playback. Turning it counterclockwise decreases the volume in either record or playback.

Tone

This control functions in playback only. Turning it clockwise from position 5 will increase the treble response; turning it counterclockwise from position 5 will attenuate the response.

Play-Record and Record Lock

This is a 3-position control: Stop, Play, and Record. Turning this control clockwise from the Stop position places the unit in play. Depressing the Record Lock and turning the control to the Record position at the same time, places the unit in Record.

NOTE: This control is interlocked with the Wind-Rewind control. It must be in the Stop position before the Wind-Rewind control can be operated.

Wind-Rewind

Turning this control to the left places the unit in the Wind position; to the right, in the Rewind position.

NOTE: This control is interlocked with the Play-Record control. It must be in the Stop position before the Play-Record control can be operated.

Pause

When this lever is raised, pressure is removed from the drive capstan, and the take-up reel is disengaged. This permits spot editing and momentary stops.

NOTE: This control is not on the Model 90.

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a full reel of tape on feed reel spindle (67), making certain the reel slots engage the protrusions on the pan. Place an empty reel on take-up spindle (27), again making certain the slots engage the protrusions on the pan.
2. Unwind about 14 inches of tape from the supply reel. Hold a section of tape taut and insert into the tape slot, making sure the dull-coated side faces the rear of the recorder.
3. Insert the free end of the tape into one of the slots in the hub of the take-up reel. While holding the end in place, turn the reel two or three times to secure the tape to the reel.

To Make a Monaural Recording

1. Plug a microphone into the Microphone jack, or place a signal from some other source into the Line Input jack.
2. Depress the Record Lock and simultaneously turn the Play-Record control to the Record position.
3. Adjust the Volume control until the average reading on the VU meter is -5.

CAUTION: Do not connect a speaker or other low-impedance load to the Output jack while making a recording.

To Make a Stereo Recording

1. Connect the interconnecting cable from the Channel-2 head jack to the stereo channel in the Model A-901 amplifier.
2. Move the On-Off switch on the tape recorder to All On. Move the On-Off switch on the amplifier to On.
3. Turn the Volume control until the VU meter reads -5.
4. Plug microphones into the Microphone Input jacks, or place signals from another source into the Line Input jacks.
5. Depress the Record Lock and simultaneously turn the Record-Play control on the tape transport to Record.
6. Place the Play-Record switch on A-901 amplifier in Record.
7. On Model 90-C, turn the switch on the built-in preamplifier, on bottom of the case, to Out.

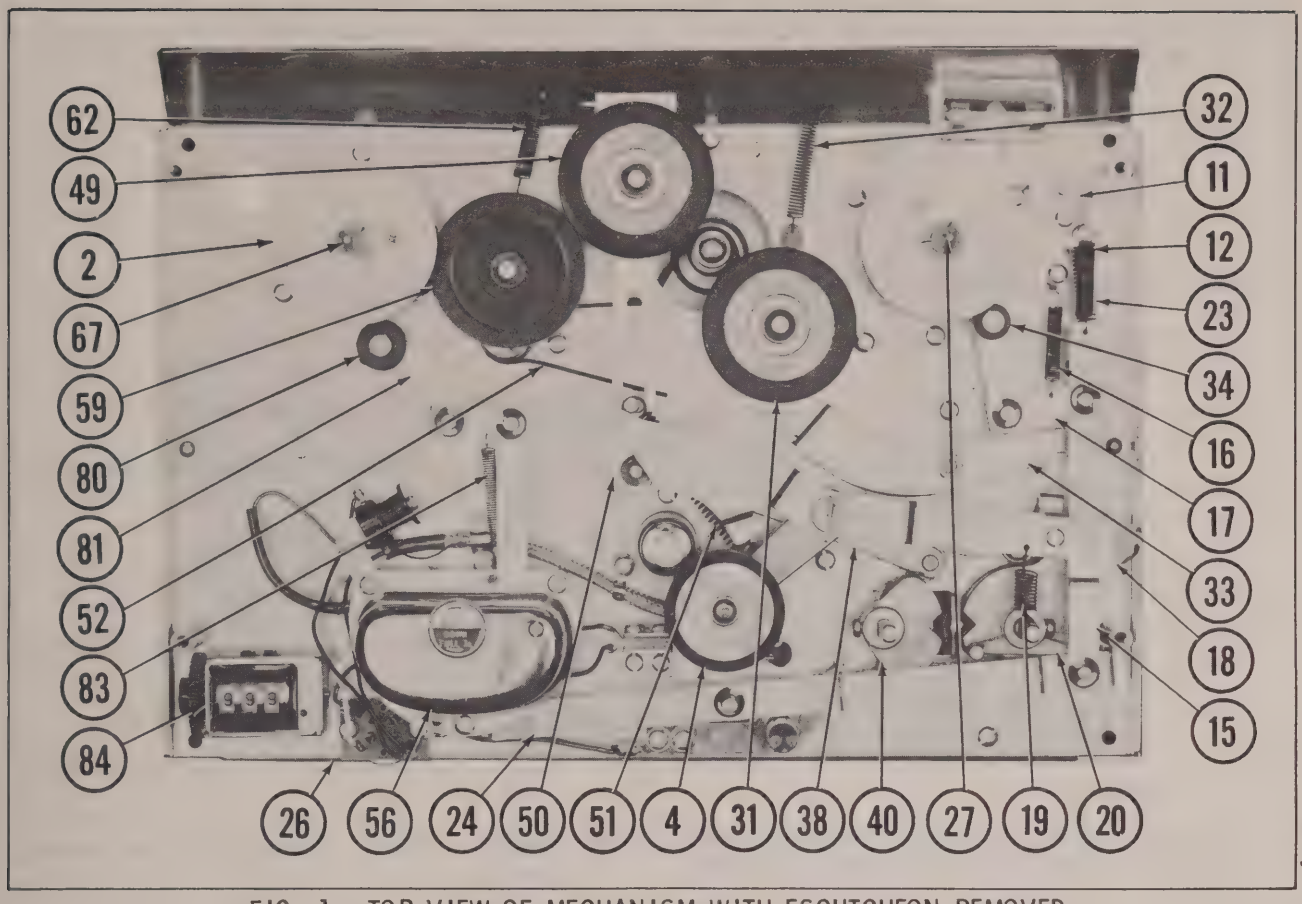


FIG. 1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED.

Monaural Playback

1. Thread the tape (see "Threading the Tape").
2. Turn the unit on and allow a few seconds for it to warm up.
3. Turn the Play-Record control to Play.
4. Adjust the volume and tone to the desired listening level.

Stereo Playback

1. Thread the tape (see "Threading the Tape").
2. Turn the tape recorder switch to All On. Turn the A-901 amplifier switch to In.
3. Connect the interconnecting cable from the Channel-2 jack of the tape recorder to the Stereo jack on the amplifier.
4. Make certain the Play-Record switch on the amplifier is in Play.
5. Turn the Play-Record control on the tape transport to Play.
6. Adjust the Volume controls on the tape recorder and amplifier to a balanced output.

Speed Change

To change the tape from 7 1/2 to 3 3/4 ips, remove the thumbscrew and bushing from the capstan. When the bushing is not being used, store it on the bushing post.

Index Counter

After a tape is threaded on the recorder, set the Index Counter to "000". The index numbers can then be noted at the beginning of each selection, for future reference.

External Speaker

An external speaker may be plugged into the Output jack. The internal speaker will be disconnected when using an external speaker.

Erasing Tape

To erase one track of a tape, turn the knob on top of the head clockwise. This raises the erase head to the half-track position. To erase both tracks at the same time, turn the knob counterclockwise. This lowers the erase head to the full-track position. When the unit is in the Record position, the erase head is automatically positioned before a new recording is made. To erase the tape without putting a new recording on it, turn the volume to minimum and the Play-Record control to Record.

To Use the Second Track (Monaural)

1. Turn the Play-Record control to Stop.

2. Remove the reel containing the tape, and place it on the left (supply) reel spindle.

3. Place the empty reel on the right (take-up) reel spindle.

4. Thread the tape, and proceed with the recording as described under "To Make a Monaural Recording."

DISASSEMBLY

To Remove Tape Transport Mechanism from Case

1. Remove the two screws in the spindle pans (one in each pan).

2. Remove the two screws holding the dress plate, and remove the dressplate.

3. Remove one screw on the right side of the escutcheon and the 7 1/2-ips bushing from the left side.

4. Remove the pressure roller.

5. Remove the Play-Record and Wind-Rewind knobs.

6. Remove the escutcheon.

7. Remove the four screws holding the tape transport to the case.

8. Unplug all connections to the tape transport and speaker, and lift the tape transport from the case.

9. To reassemble, reverse the foregoing procedure.

To Remove Amplifier from Case

1. Remove the four screws holding the amplifier and escutcheon to the case.

2. Unplug all connecting plugs.

3. Lift the amplifier from the case.

4. To reassemble, reverse the foregoing procedure.

To Remove Preamp from Case on Model 90-C

1. Remove the two screws from the bottom of the case.

2. Unplug all connecting plugs.

3. Lift the preamp from the case.

4. To reassemble, reverse the foregoing procedure.

To Remove Model A-901 Amplifier from Case

1. Remove the four screws holding the amplifier to the case.

2. Remove the four screws holding the speaker cover on.

3. Disconnect the speaker.

4. Feed the AC cord through the hole in the storage compartment.

5. Lift the amplifier from the case.

6. To reassemble, reverse the foregoing procecure.

ADJUSTMENTS

Record-Playback Head Alignment With Standard Alignment Tape

1. Thread the tape (see "Threading the Tape").

2. Connect a 0.5-volt AC voltmeter to a standard phono plug, and insert the plug into the Output jack.

3. Turn the Tone control to maximum.

4. Remove the two screws from the head cover, and remove the head cover.

5. Insert a screwdriver, through the hole in the head shield, into the alignment screw.

6. Play back the tape at full volume, and rotate the alignment screw in either direction until the 10,000-cycle note gives the highest meter reading.

Record-Playback Head Alignment With Commercial Music Tape

1. Thread the tape (see "Threading the Tape").

2. Play back the tape at a normal listening level, and adjust the head alignment screw for maximum clarity of high-pitched instruments.

Brake Shoes

When brake shoes (34) and (80) become worn, loosen the mounting screws and rotate the shoes a few degrees until a new braking surface is exposed.

LUBRICATION

Lubricate the following parts every three months in heavy service, every six months in moderate ser-

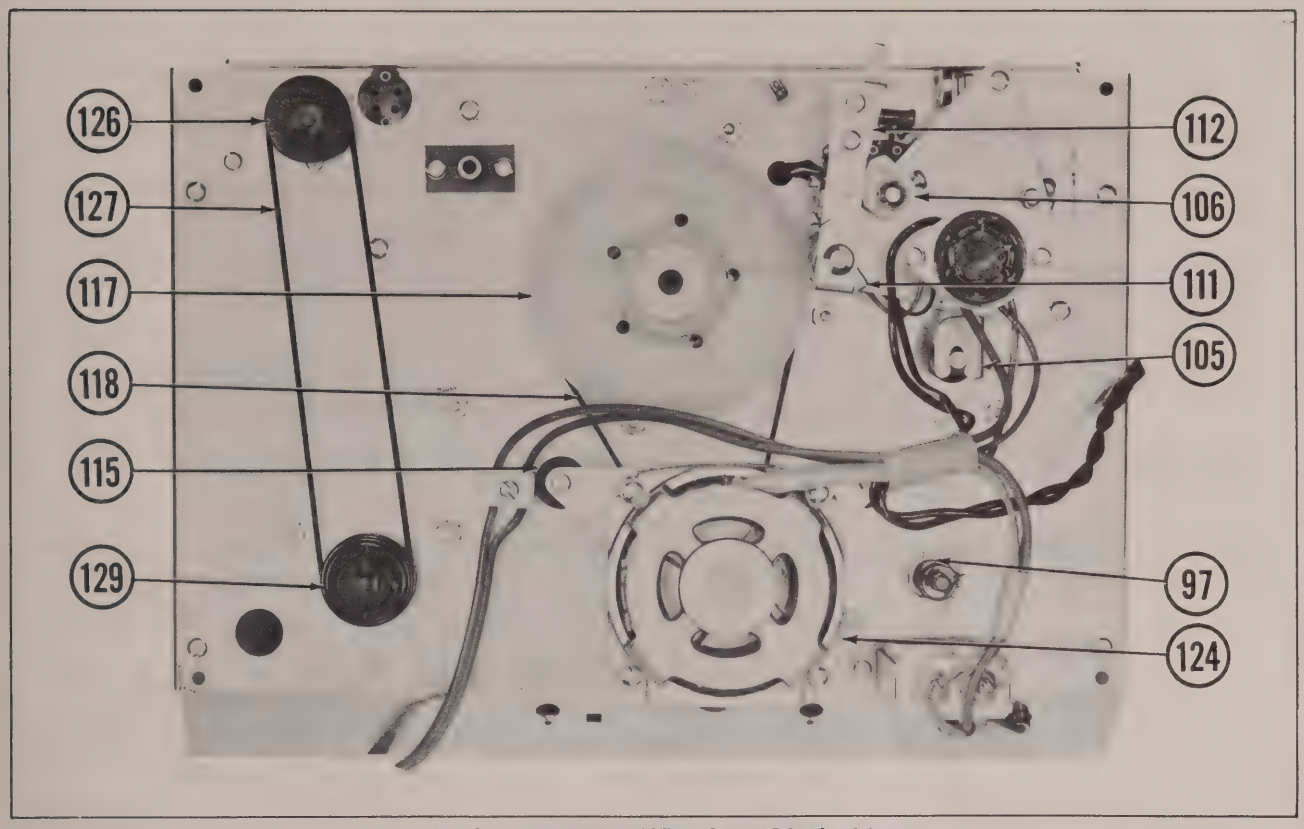


FIG. 2 BOTTOM VIEW OF MECHANISM.

vice, or once a year in light service, as follows:

1. Feed and take-up reel spindle shafts, with two drops of light machine oil on each shaft.
2. Rewind idler bearing and wind take-up idler bearing, with two drops of light machine oil on each bearing.
3. Apply a liberal amount of light machine grease to drive idler bearing bore.
4. Saturate the felt washer in the chrome retaining cup of the drive capstan with light machine oil.
5. Apply a liberal amount of light machine grease to each roller on all levers and cams.
6. The motor bearings are lubricated and sealed at the factory and need no further lubrication.

CLEANING

Most defects, other than wear or breakage, can be traced to dirty surfaces. The recording head, capstan, and pinch wheel (4) may accumulate tape coating residue, which is worn off the tape as it passes these parts. Remove this accumulation periodically, because it may cause faint recording and poor playback. Clean these parts with a soft cotton swab soaked in alcohol.

TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Motor does not run, and pilot light does not light.	1. AC cord disconnected.	1. Connect AC cord.
	2. Fuse blown.	2. Replace fuse.
Distorted recordings and poor erase.	1. Bias oscillator tube defective.	1. Replace bias oscillator tube.
Pilot light lights, motor runs, but no record or play.	1. Speaker wires disconnected or broken.	1. Connect or replace speaker wires.
Speaker hum at full volume.	1. Head cable disconnected.	1. Reconnect head cable.

TROUBLE CHART (CON'T.)

SYMPTOM	CAUSE	REMEDY
Motor runs, pilot light lights, no record or playback, no speaker hum, and VU meter does not read on record.	1. Defective rectifier tube. 2. Defective output tube.	1. Replace rectifier tube. 2. Replace output tube.
No record or playback, but slight speaker hum variable with volume control.	1. Preamplifier tube defective.	1. Replace preamplifier tube.
Noisy playback or poor high-frequency response.	1. Heads misaligned. 2. Heads magnetized.	1. See "Head Alignment." 2. Demagnetize heads.
Wow or flutter at 7 1/2-ips speed.	1. Speed change bushing slipping on shaft.	1. Tighten screw (120).
Insufficient drive at 7 1/2-or 3 3/4-ips speeds.	1. Defective main drive idler wheel (31). 2. Oil on capstan. 3. Main drive belt (118) defective. 4. Drive motor (124) or starting capacitor defective.	1. Replace main drive idler wheel (31). 2. See "Cleaning." 3. Replace main drive belt (118). 4. Replace drive motor (124) or starting capacitor.
Tape spills when going from wind or rewind to stop.	1. Reel diameters unequal. 2. Brake shoes (34) and (80) worn or out of adjustment.	1. Tape reels must have the same diameter. 2. Replace or adjust brake shoes (34) and (80).
Index Counter does not function.	1. Counter belt (127) worn or broken.	1. Replace counter belt (127).

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	90-50-43	Reel Table Screw (2)
2	90-50-15	Reel Table (2)
3	90-50-47	Pinch Wheel Screw
4	90-50-64	Pinch Wheel-Models 90 & 90-S
	90-52-27	Pinch Wheel-Model 90-C
5	90-50-16	Transport Deck Panel
6	90-38	Record-Play Knob
7		Set Screw
8	90-50-22	Wind-Rewind Knob
9	90-50-17	Transport Deck Panel, Head & Controls
10	90-50-30	Take-up Spring Post Bracket
11		Bracket
12	90-50-89	Wind-Take-up Slide Bar Spring-Models 90 & 90-S
13		Bracket
14		Retaining Ring
15	90-50-79	Take-up Brake Link Lever
16	90-50-81	Take-up Brake Spring
17	90-50-80	Take-up Brake Bar Lever
18	90-52-23	Pause Lever-Model 90-C
19	90-52-12	Pause-Lever Load Spring-Model 90-C
20	90-50-94	Wind-Rewind Operating Cam
20A		Set Screw
21	90-50-32	Steel Ball

Ref. No.	Part No.	Description
22	90-50-86	Rewind-Take-up Control Pivot Roller
23	90-50-90	Take-up Brake Link Spring
24	90-50-78	Main-Brake Pivot Bar Lever
25	90-50-87	Wind-Take-up Control Pivot Lever-Models 90 & 90-S
26	90-50-25	Deck Baseplate (State Model)
27	90-50-24	Take-up Spindle
28	90-50-36	Splined Roller
29		Retaining Ring
30		Washer
31	90-50-72	Main-Drive Idler Wheel
32	90-50-92	Drive Idler Load Spring
33	90-50-82	Wind-Take-up Idler Pivot Bar Lever
34	90-50-77	Brake Shoe, Small
35	90-50-51	Main-Drive Idler Pivot Lever Screw
36	90-50-39	Spindle Mounting Plate
37		Roller Securing Screw
38	90-50-91	Drive Idler Pivot Lever-Models 90 & 90-S
	90-52-43	Drive Idler Pivot Lever-Model 90-C
39		Roller
40	90-50-93	Play-Record Operating Cam

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
41	90-52-21	Ch. 2 Shorting Switch
42	90-52-08	Rewind Activating Lever
43	90-51-77	Record Lock Button
44	90-51-06	Record Lock Spring
45	90-50-57	Record Lock Screw
46		Lockwasher
47		Insulator
48		Insulator
49	90-52-04	Rewind Idler Wheel
50	90-52-07	Rewind Positioning Lever
51	90-52-26	Tape-Drive Idler Load Spring
52	90-52-11	Rewind Intermediary-Idler Load Spring
53	90-50-48	Head Cover Screw
54	90-51-96	Head Cover-Model 90-C
	90-51-73	Head Cover-Model 90-S
	90-51-18	Head Cover-Model 90
55	90-50-55	Head Screw
56	90-31	Michigan Mag. Head Ass'y., Stereo-Model 90-S
	90-51-64	Head Ass'y., Monaural-Model 90
	90-51-72	Head Ass'y., Stereo-Model 90-S
	90-51-95	Multierase Head Ass'y., Stereo-Model 90-C
57		Retaining Ring
58		Washer
59	90-52-05	Rewind Intermediary-Idler Wheel-Model 90-C
60		Intermediary-Idler Spring Lever Screw
61	90-52-13	Intermediary-Idler Spring Lever
62	90-52-10	Rewind-Idler Release Spring
63	90-50-44	Tape-Guide Ball-Bearing Screw
64		Tape-Guide Top Plate
65	90-50-45	Tape-Guide Washer
66	90-50-63	Tape-Guide Ball Bearing
67	90-52-46	Feed-Reel Spindle Ass'y. -Model 90-C Includes Items 67 thru 72
67A	90-50-02	Feed-Reel Spindle Ass'y. Belt Rewind-Models 90 & 90-S
68	90-52-06	Rubber Rewind Drive Ring-Model 90-C
69	90-52-42	Conical Spindle Spring
70		Washer
71		Retaining Ring
72	90-50-36	Splined Roller
73		Washer
74		Spindle Housing Screw
75	90-50-39	Spindle Mounting Plate
76	90-50-65	Take-up Spindle Spring
77		Washer
78		Retaining Ring
79		Brake-Shoe Mounting Screw
80	90-50-77	Brake Shoe, Large (State Size)
81	90-50-75	Feed-Reel Brake Bar Lever
82		Brake-Shoe Nut
83	90-50-76	Feed-Reel Brake-Spring
84	90-50-07	Index-Counter Ass'y.
85	90-50-39	Spindle Mounting Plate
86	90-50-33	Control Ass'y. Bracket
87		Wind-Rewind Detent
88		Fiber Washer
89		Cam
90		Load Spring
91	90-50-98	Idler-Lift Operating Cam
92		Set Screw
93	90-50-09	Wind-Rewind Control Shaft
94		Bottom Plate-Control Ass'y. Bracket
95		Lockwasher
96		Screw
97	90-50-66	Take-Up Spindle Spring
98	90-50-38	Retaining Cup
99		Flat Washer
100	90-50-53	Retaining Ring
101	90-50-97	Idler Lifting-Lever Load Spring
102		Switch Shaft
103		Screw
104		Hex Nut
105	90-50-96	Idler Lifting Lever
106	9051-03	Amplifier Switch-Bar Control Cam
107		Set Screw
108		Flat Washer
109		Cotter Pin
110	90-51-32	Amplifier-Switch Bar Screw
111	90-51-38	Amplifier-Switch Slide-Bar Load Spring
112	90-50-99	Amplifier-Switch Operating-Bar Lever
113		Fiber Washer
114		Retaining Ring
115	90-51-75	Rubber Motor Mount
116	90-51-76	Motor Grounding Spring
117	90-50-95	Flywheel and Capstan-Models 90 and 90-S
	90-52-53	Flywheel and Capstan-Model 90-C
118	90-51-04	Main Drive Belt-Models 90 & 90-S
	90-52-03	Main Drive Belt-Model 90-C
119	90-50-34	Motor-Mount Plate Bracket
120	90-50-46	Speed-Change Bushing Thumb-screw-Models 90 & 90-S
	90-52-42	Speed-Change Bushing Thumb-screw-Model 90-C
121	90-50-21	Speed-Change Bushing-Models 90 and 90-S
	90-52-44	Speed-Change Bushing-Model 90-C
122	90-51-94	Upper Knurled Bushing-Models 90-S and 90-C
123		Motor Mounting Screw
124	90-50-14	Drive Motor
125		Set Screw
126	90-50-67	Counter Pulley
127 *	90-50-68*	Counter Belt *
128		Set Screw
129	90-50-69	Spindle Index-Counter Pulley
130		Cotter Pin

* Counter Belt Walsco Part No. 1410-54

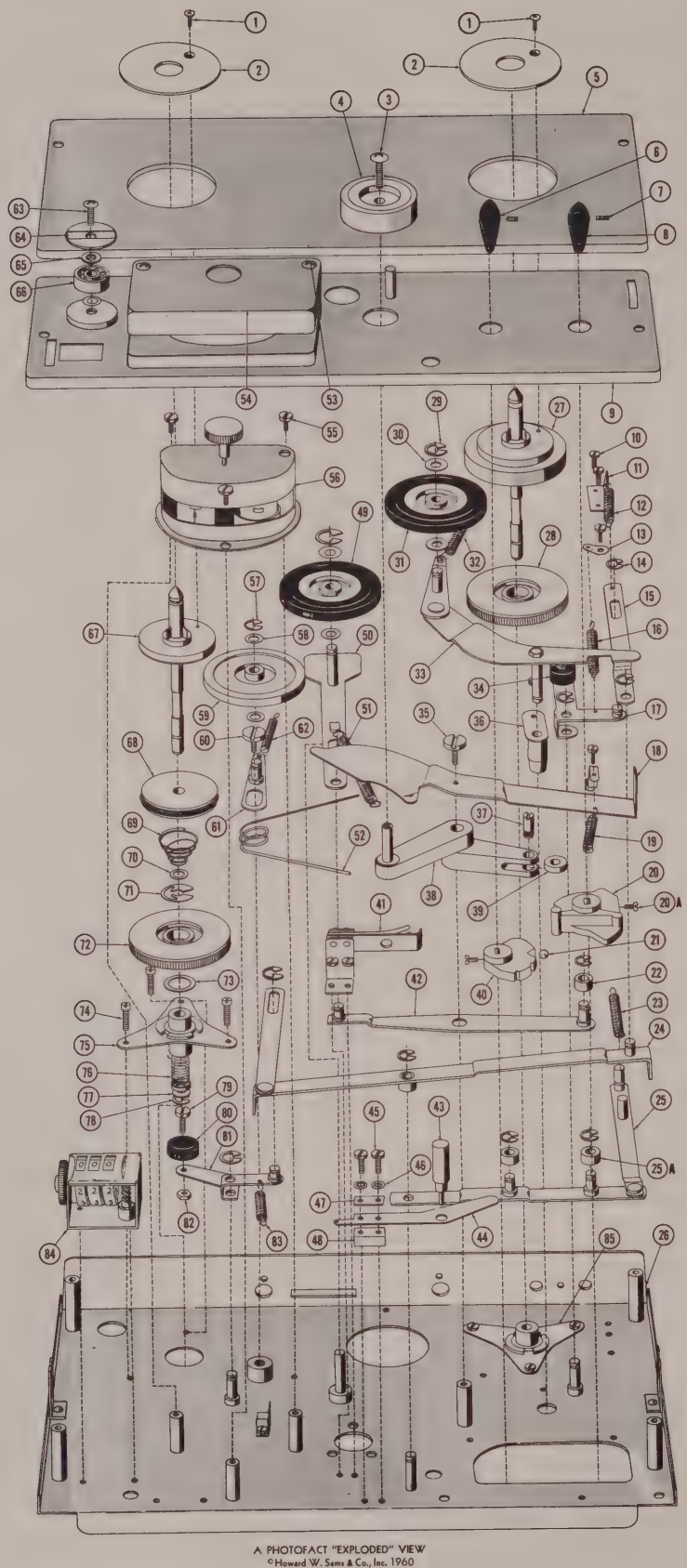


FIG. 3A EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

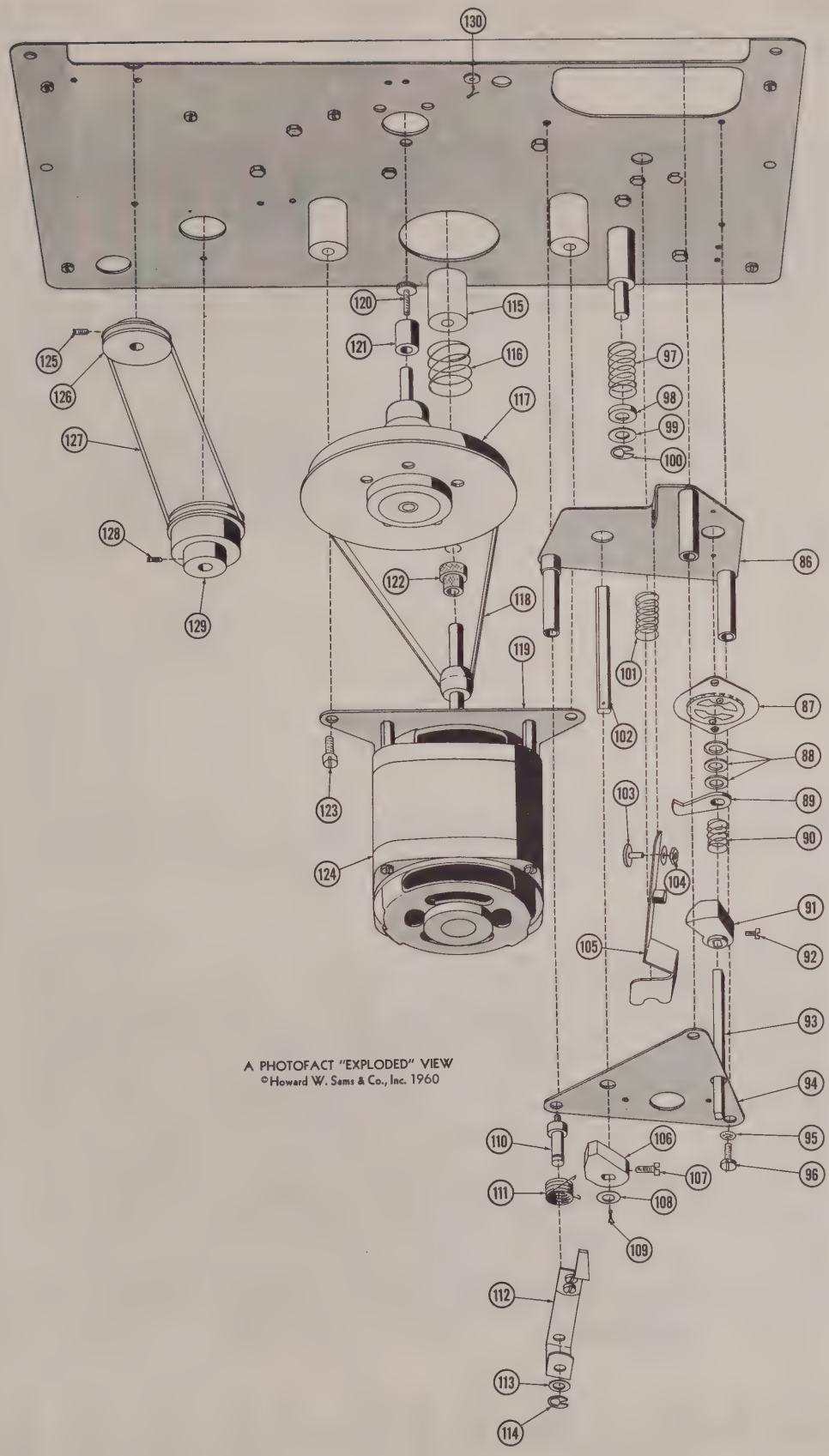
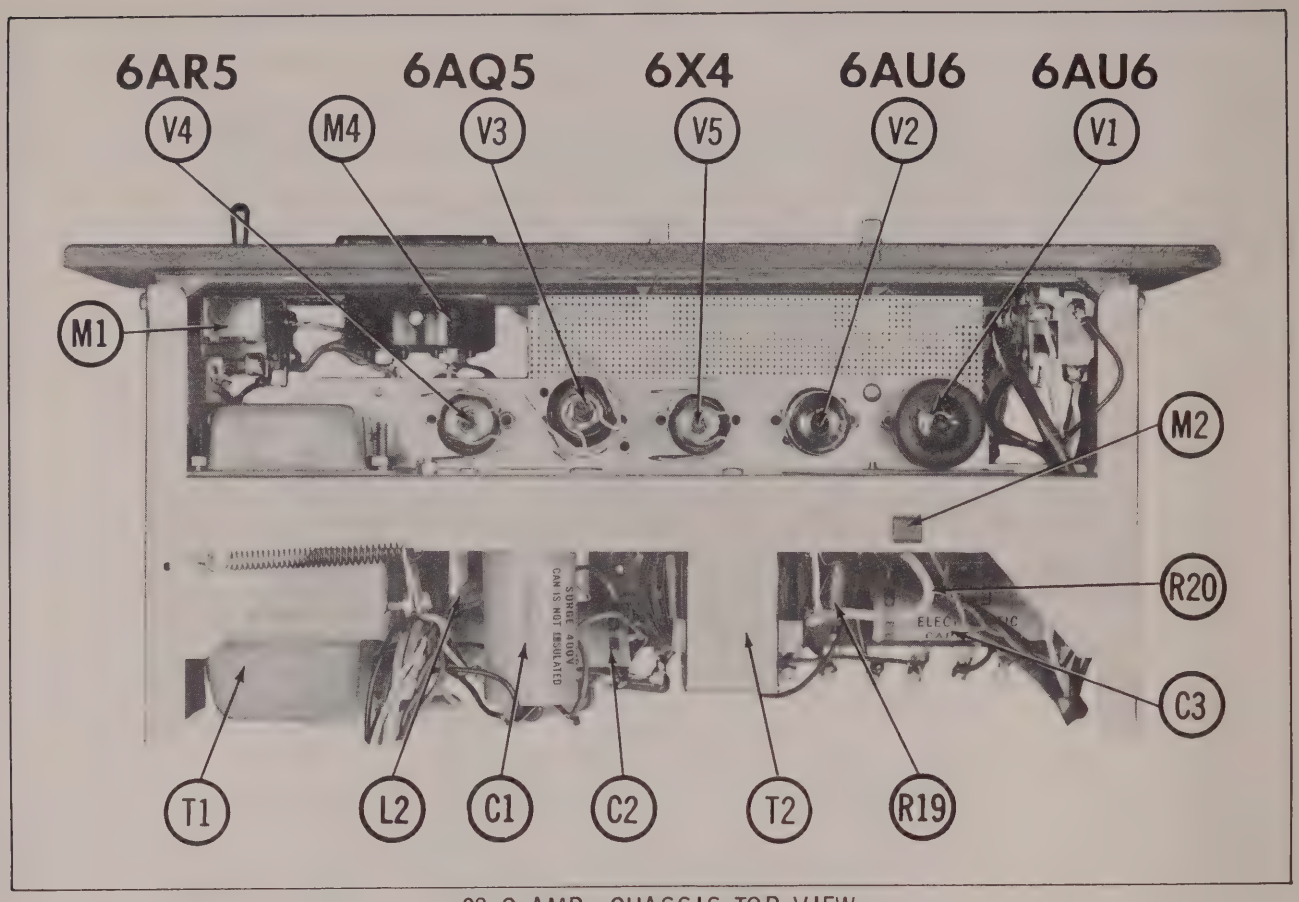
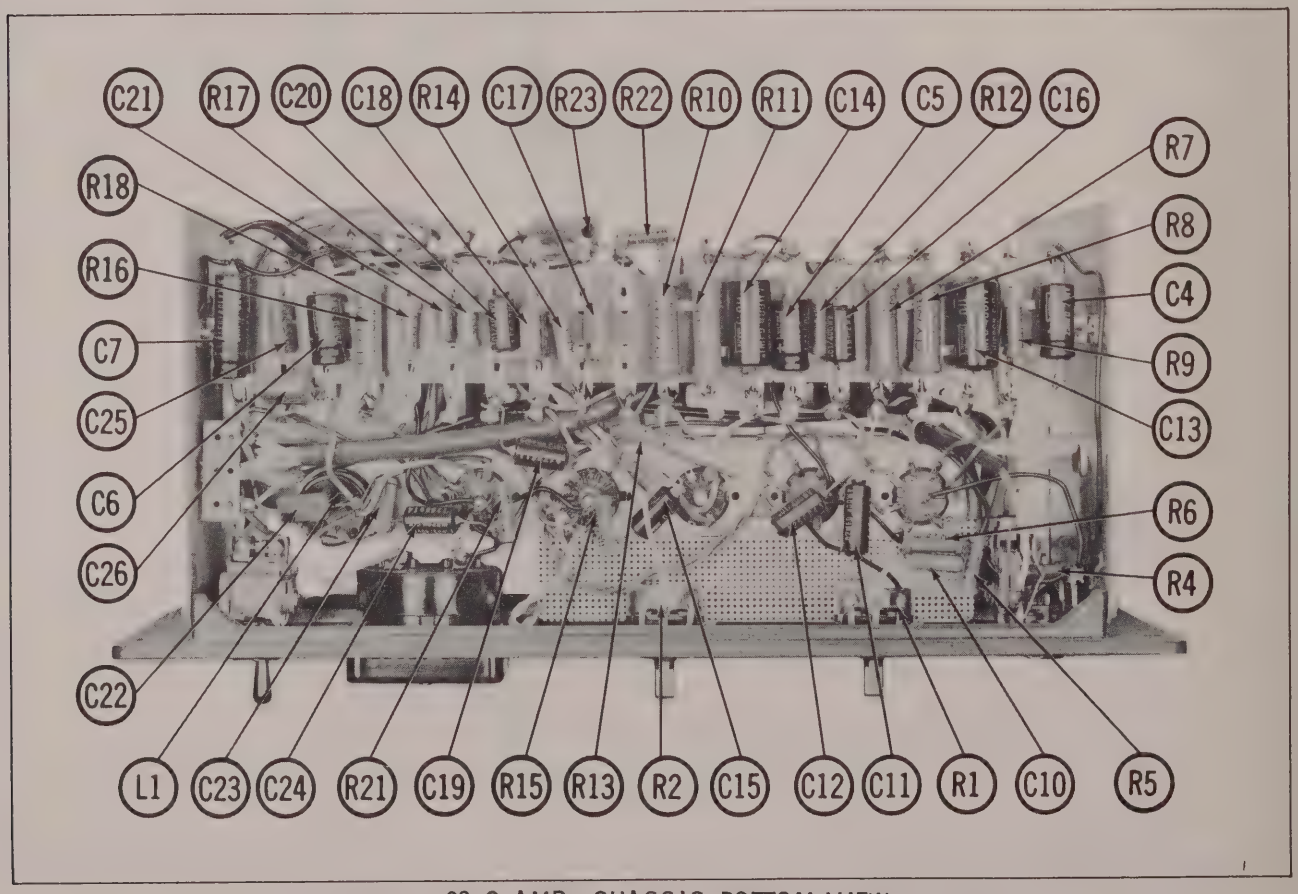


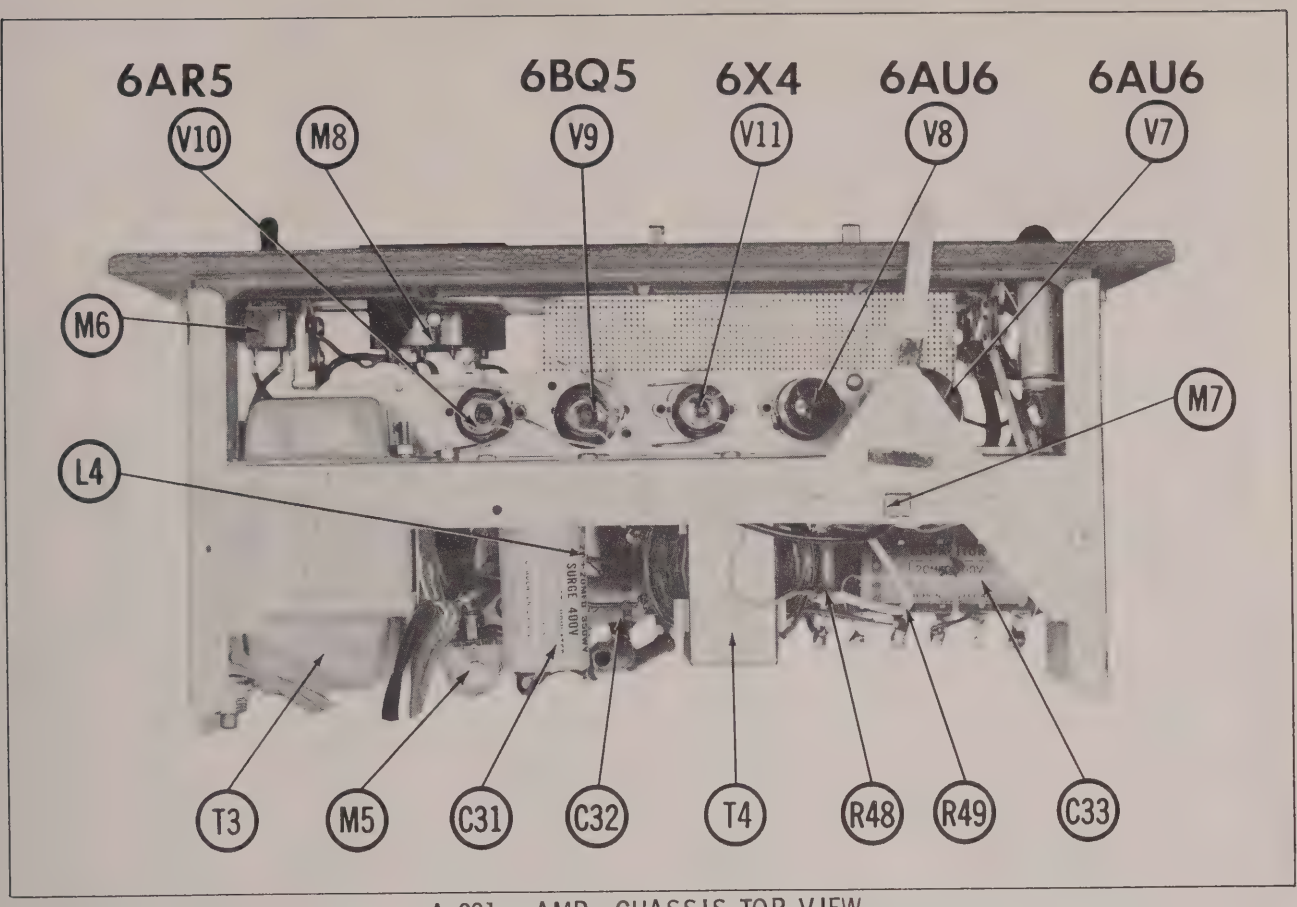
FIG. 3B EXPLODED VIEW OF PARTS BELOW BASEPLATE.



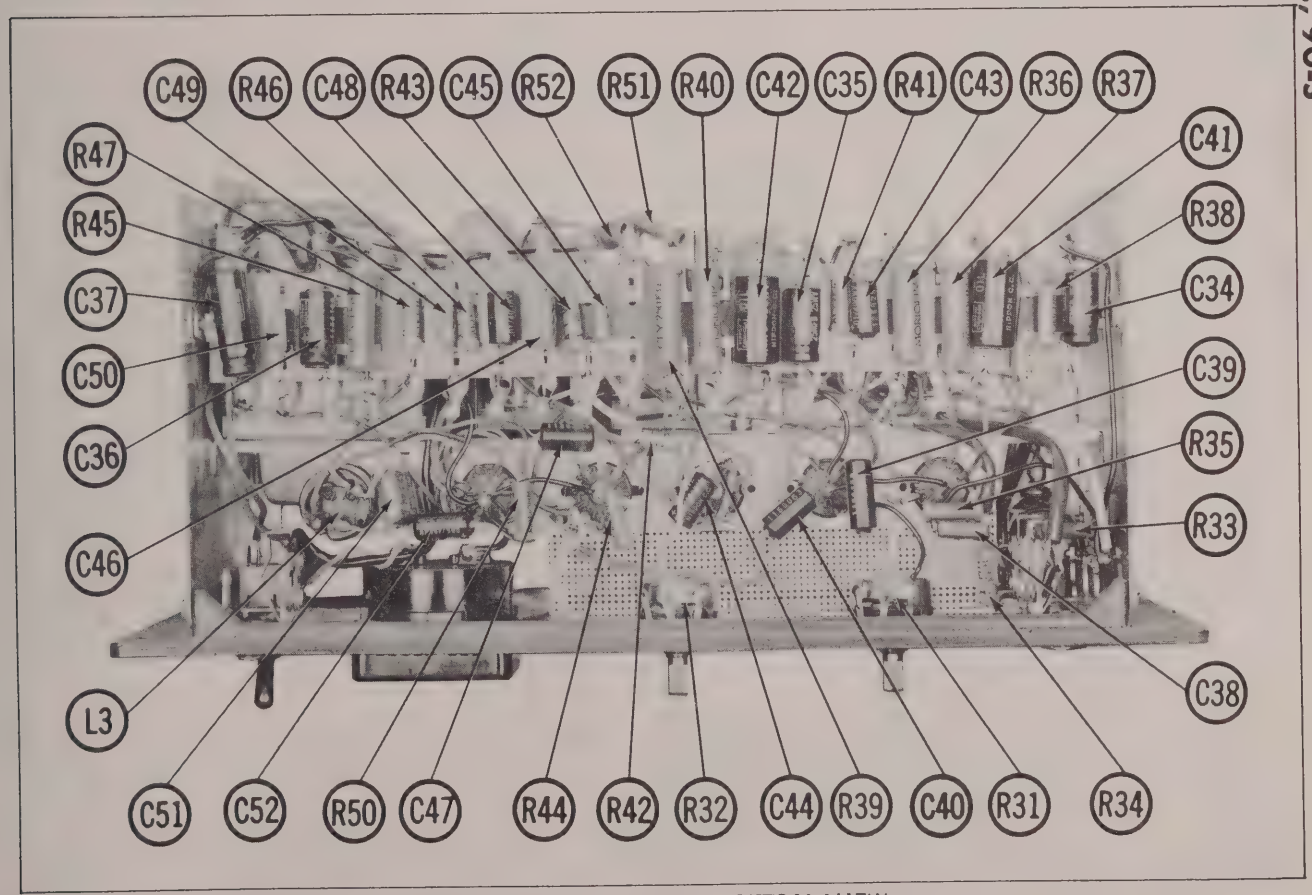
90-C AMP. CHASSIS TOP VIEW.



90-C AMP. CHASSIS BOTTOM VIEW.



A-901 AMP. CHASSIS TOP VIEW.



A-901 AMP. CHASSIS BOTTOM VIEW.

90-C ELECT. PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Preamplifier	6AU6
V2	AF Amplifier	6AU6
V3	Output	6BQ5
V4	Bias Oscillator	6AR5
V5	Rectifier	6X4
V6	Stereo Preamplifier	12AD7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ROBERTS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	20	350	90-51-23	AFH2-37 ①	B0300 ②	TCD65	TMD-35 ③		
B	20	350							
C2	20	300	90-51-18	PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C3	20	300	90-51-18	PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C4	25	25	90-51-14	SRE25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	
C5	25	25	90-51-14	SRE25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	
C6	25	25	90-51-14	SRE25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	
C7	3	350	90-51-21	PRS1600	BR435	TC60	TD-4-450	TVA-1601	
C8	5	300	90-52-36	PRS1610	BR835	TC60	TD-8-350	TVA-1603	
C9	2.2	300VAC	90-15-13			TC70 †		OR-3020	

① Use Part #TU-2 insulating tube. ② Use Part #28521-5 insulating tube. ③ Use insulating tube.
† Use 2 units. Connect negative terminals together.
Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	500	5%		1469-0005		5R5T5	CM-20B-501J	MCE245	MS-35
C11	.02	400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C12	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C13	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C14	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C15	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C16	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C17	50	5%		1469-00005	TCZ-50	22R5Q5	CM-20B-500J	MCE225	MS-45
C18	1000			1468-001	DD-102	5W5D1	CM-20B-102M	MC255	1FM-21
C19	.002	400V		P488N-002	DD-202	CUB6D2	6DP-1-202	GEM-622	6TM-D2
C20	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C21	50	5%		1469-00005	TCZ-50	22R5Q5	CM-20B-500J	MCE225	MS-45
C22	200	5%		1469-0002	TCZ-200	22R5T2	CM-20B-201J	MCE237	MS-320
C23	1000	5%		1469-001		1R5D1	CM-20B-102J	MCE255	MS-21
C24	.005	400V		P488N-005	DD-502	CUB6D5	6DP-1-502	GEM-625	6TM-S5
C25	200	5%		1469-0002	TCZ-200	22R5T2	CM-20B-201J	MCE237	MS-32
C26	1000			1468-001	DD-102	5W5D1	CM-20B-102M	MC255	1FM-21
C27	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C28	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C29	500	5%		1469-0005		5R5T5	CM-20B-501J	MCE245	MS-35
C30	.01	400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ROBERTS PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500K		90-51-97	B-60				Volume, Channel 1
R2	30K		90-51-53	B-25				Tone, Channel 1
R3	300Ω		90-52-40					Hum Balance, Preamp.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	10K	
R5	1meg	
R6	500K	
R7	250K	
R8	750K	
R9	1000Ω	
R10	250K	
R11	750K	
R12	2000Ω	
R13	2meg	
R14	1meg	
R15	500K	
R16	150Ω	
R17	300K	
R18	100K	
R19	100Ω	
R20	8Ω	
R21	500K	
R22	50K	
R23	5000Ω	
R24	10meg	
R25	250K	
R26	50K	
R27	200K	
R28	10meg	
R29	250K	
R30	500Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ROBERTS PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	90-51-35						

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L2	.050A	210Ω	7 Hy.	90-52-20	20C84	C-2975		C-1707	20C84	C-4X

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .38A	580VCT @ .050A	6.3V @ .9A	90-51-57						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.7A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6500Ω	6-8Ω	90-51-58	24S07	A-2904	AU-604	A-3337	24S07	S-55Z	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ROBERTS PART No.	QUAM PART No.	NOTES
SP1	8"	PM	6-8Ω	90-35 ①	8A31Z8	① Some versions may use 5" x 7" Part #90-51-70.

MISCELLANEOUS

ITEM No.	PART NAME	ROBERTS PART No.	NOTES
M1	Switch	90-06	Off-On, DPDT, Center Off, Toggle
M2	Switch	90-51-55	Record-Playback (4PDT Slide Type)
M3	Switch	90-36	Preamp. In-Out (DPDT Slide Type)
M4	Meter	90-51-36	

A-901 ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V7	Preamplifier	6AU6
V8	AF Amplifier	6AU6
V9	Output	6BQ5
V10	Bias Oscillator	6AR5
V11	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ROBERTS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C31A	20	350	90-51-23	AFH2-37 ①	B0300 ②	TCD65	TMD-35 ③	TVL-2626	
B	20	350							
C32	20	300	90-51-18	PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C33	20	300	90-51-18	PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C34	25	25	90-51-14	SRE25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	
C35	25	25	90-51-14	SRE25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	
C36	25	25	90-51-14	SRE25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	
C37	3	350	90-51-21	PRS1600	BR435	TC60	TD-4-450	TVA-1601	

① Use Part #TU-2 insulating tube. ② Use Part #28521-5 insulating tube. ③ Use insulating tube.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C38	250 5%	(200mmf) *	1469-00025	TCZ-240	22R5T25	CM-20B-251J	MCE240	MS-325
C39	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C40	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C41	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C42	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C43	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C44	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C45	50 5%		1469-00005	TCZ-50	22R5Q5	CM-20B-500J	MCE225	MS-45
C46	1000		1468-001	DD-102	4W5D1	CM-20B-102M	MC255	1FM-21
C47	.002 400V		P488N-002	DD-202	CUB6D2	6DP-1-202	GEM-622	6TM-D2
C48	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C49	50 5%		1469-00005	TCZ-50	22R5Q5	CM-20B-500J	MCE225	MS-45
C50	200 5%		1469-0002	TCZ-200	22R5T2	CM-20B-201J	MCE237	MS-320
C51	1000 5%		1469-001		1R5D1	CM-20B-102J	MCE255	MS-21
C52	.005 400V		P488N-005	DD-502	CUB4D5	6DP-1-502	GEM-625	6TM-D5

* Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	ROBERTS PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R31	500K		90-51-97	B-60				Volume, Channel 2
R32	30K		90-51-53	B-25				Tone, Channel 2

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R33	10K	
R34	1meg	
R35	500K	
R36	250K	
R37	750K	
R38	1000Ω	
R39	250K	

ITEM No.	RATING	REMARKS
R40	750K	
R41	2000Ω	
R42	2meg	
R43	1meg	
R44	500K	
R45	150Ω	
R46	300K	

ITEM No.	RATING	REMARKS
R47	100K	
R48	100Ω	
R49	8Ω	
R50	500K	
R51	50K	
R52	5000Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ROBERTS PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L3	Bias Osc.	90-51-35						

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L4	.045A	210Ω	7 Hy.	90-52-20	20C84	C-2975		C-1707	20C84	C-4X

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	117V @ .37A	585VCT @ .045A	6.3V @ .6A	6.3V @ 1.7A			90-51-57						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	6500Ω	6-8Ω	90-51-58	24S07	A-2904	AU-604	A-3337	24S07	S-55Z	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	ROBERTS PART No.	QUAM PART No.	NOTES
SP2	8"	PM	6-8Ω	90-35 ①	8A31Z8	① Some versions may use 5" x 7" Part #90-51-70.

FUSES

ITEM No.	TYPE	RATING	ROBERTS PART No. FUSE	ROBERTS PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M5	3AG	2A 250V	90-50-41	90-50-42	312002 (3AG 2A 250V)	356001	AGC2	4407

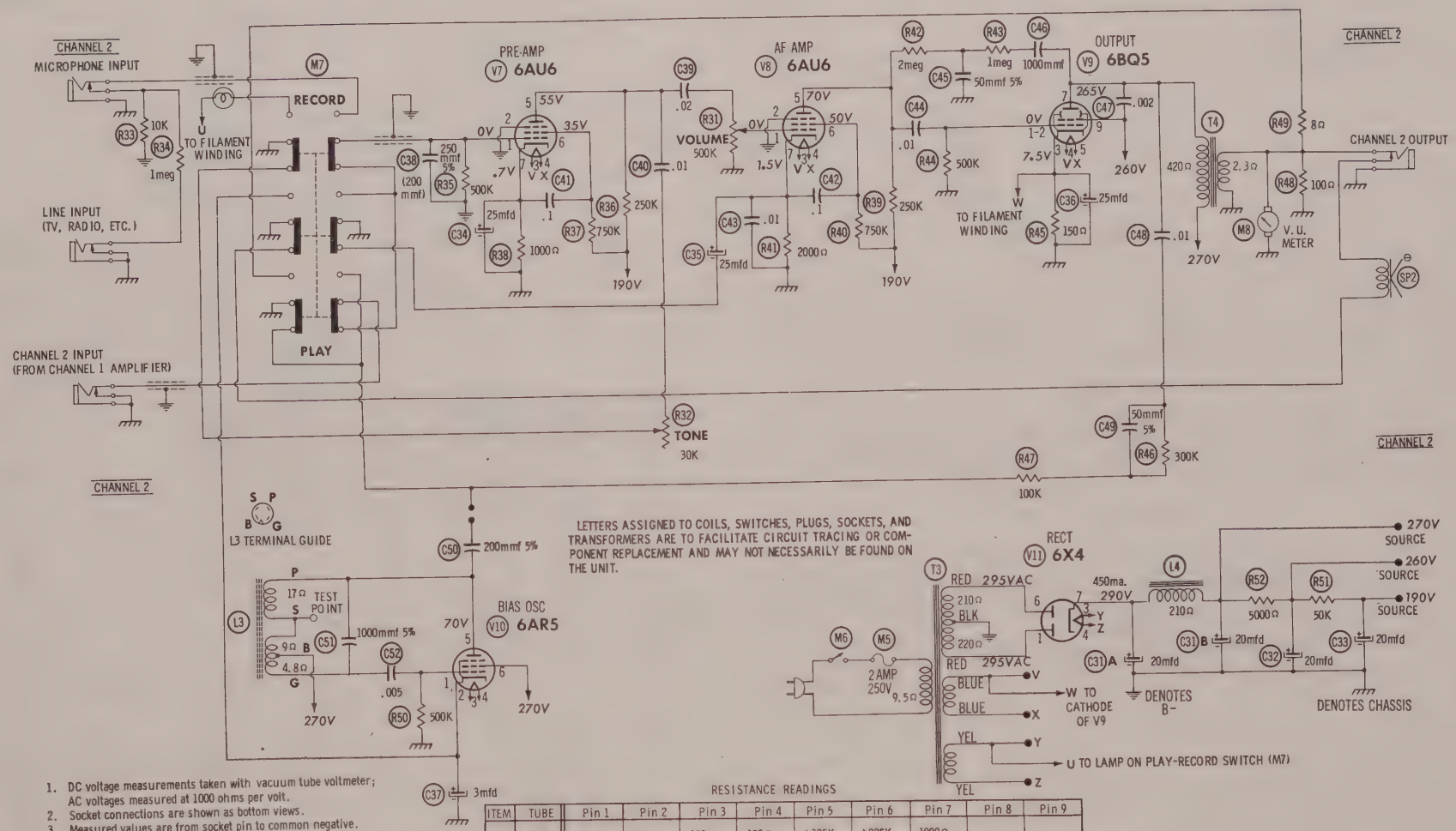
MISCELLANEOUS

ITEM No.	PART NAME	ROBERTS PART No.	NOTES
M6	Switch	90-51-56	Off-On, Toggle, (SPST)
M7	Switch	90-52-48	Record-Playback (4PTT Slide Type)
M8	Meter	90-51-36	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



LETTERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V7	6AU6	500K	0Ω	150Ω	150Ω	†305K	†805K	1000Ω		
V8	6AU6	0Ω	0Ω	150Ω	150Ω	†305K	†805K	2000Ω		
V9	6BQ5	500K	500K	150Ω	150Ω	150Ω	NC	†640Ω	NC	†5700Ω
V10	6AR5	500K	INF ■0Ω	80Ω	80Ω	†250Ω	†210Ω	NC		
V11	6X4	220Ω	NC	80Ω	80Ω	NC	210Ω	¶		

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN "RECORD" POSITION.
† MEASURED FROM PIN 7 OF V11.
NC NO CONNECTION

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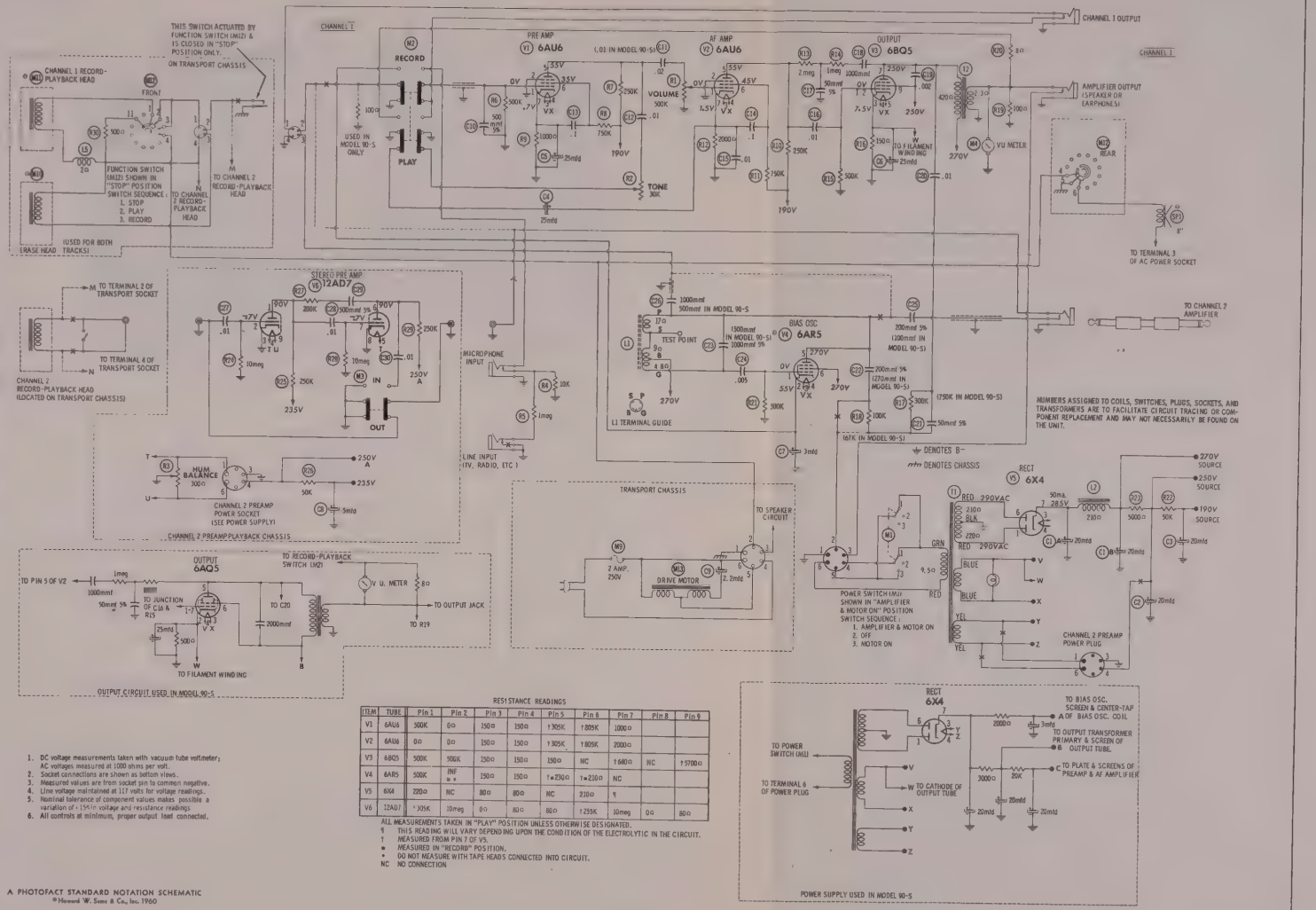
ROBERTS MODEL A-901



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6	500K	0Ω	150Ω	150Ω	†305K	†805K	1000Ω		
V2	6AU6	0Ω	0Ω	150Ω	150Ω	†305K	†805K	2000Ω		
V3	6BQ5	500K	900K	150Ω	150Ω	150Ω	NC	†640Ω	NC	†570Ω
V4	6AR5	500K	INF ∞	150Ω	150Ω	†∞230Ω	†∞210Ω	NC		
V5	6X4	220Ω	NC	80Ω	80Ω	NC	210Ω	¶		
V6	12AD7	†305K	10meg	0Ω	80Ω	80Ω	†255K	10meg	0Ω	80Ω

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
∞ MEASURED IN "RECORD" POSITION.
* DO NOT MEASURE WITH TAPE HEADS CONNECTED INTO CIRCUIT.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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ROBERTS MODELS 90-C, 90-S

TAPE DECK PARTS LIST AND DESCRIPTIONS

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ROBERTS PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L5	Hum Buck Coil	90-50-62						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ROBERTS PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M9	3AG	2A 250V	90-50-41	90-50-42	312002 (3AG 2A 250V)	356001	AGC2	4407

MISCELLANEOUS

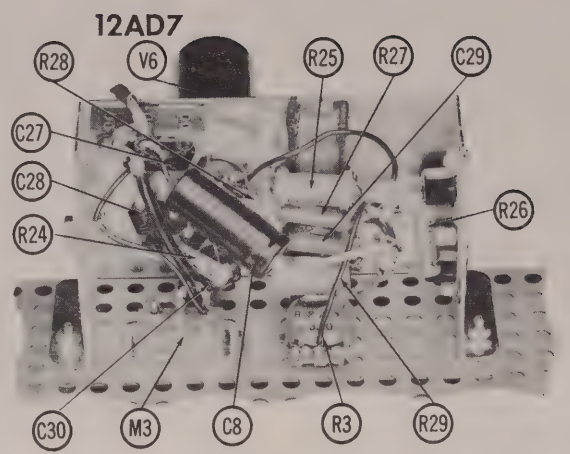
ITEM No.	PART NAME	ROBERTS PART No.	NOTES
M10	Erase Head	90-51-95	(Multirase Stereo) Models 90B, 90C
M11	Record Head Ass'y	90-31	(Michigan Mag. Stereo) Model 90S
	Record Head Ass'y	90-51-72	(Stereo) Model 90S
	Record Head Ass'y	90-51-64	(Monaural) Model 90
M12	Switch	90-51-08	Function (Rotary)
M13	Motor	90-50-14	
	Microphone	90-01	

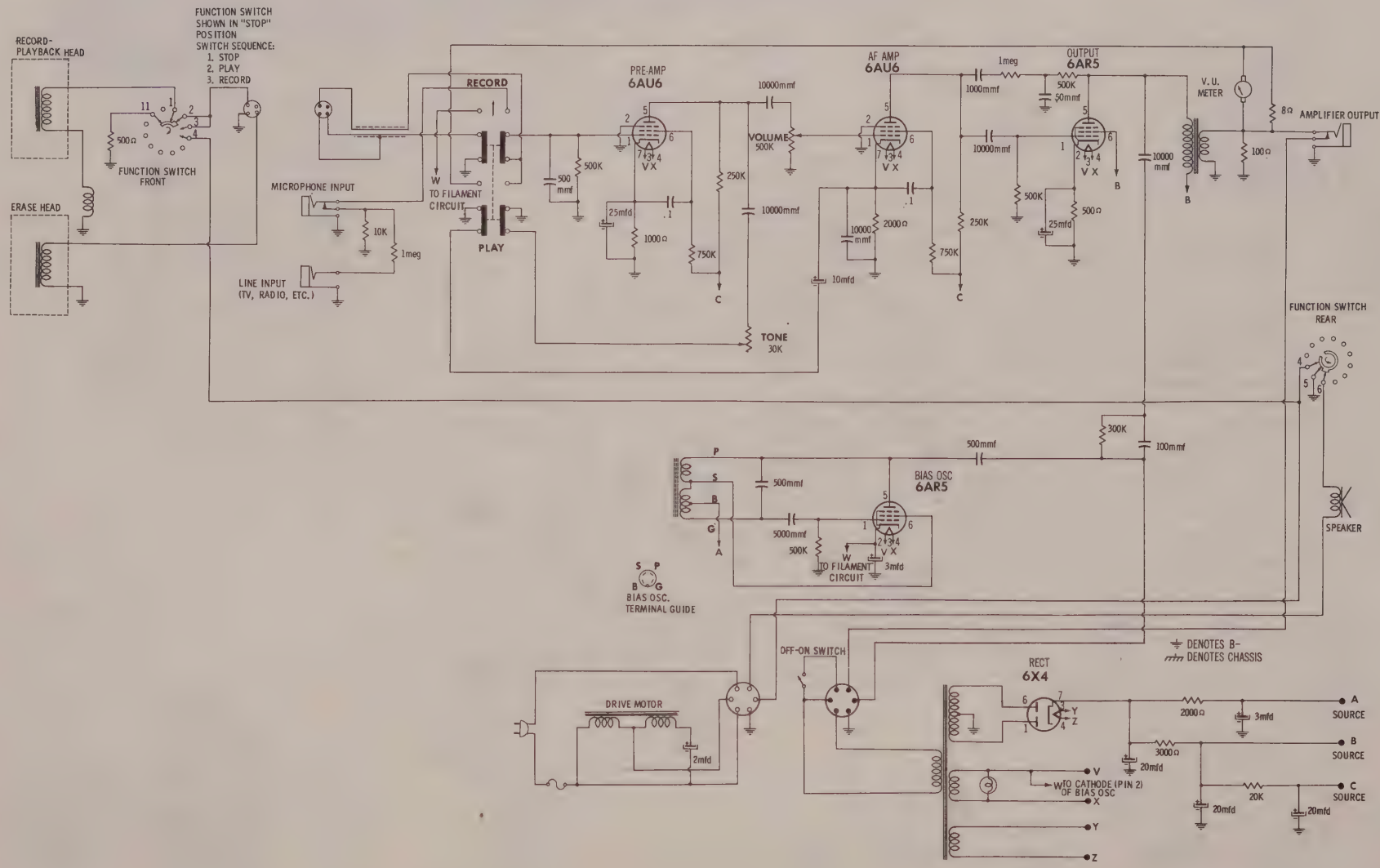
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	90-51-27	Volume, Tone
Knob	90-38	Record-Playback Lever
Knob	90-50-22	Wind-Rewind

STEREO PRE-AMP CHASSIS





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ROBERTS MODEL 90

PHOTOFACT® Folder

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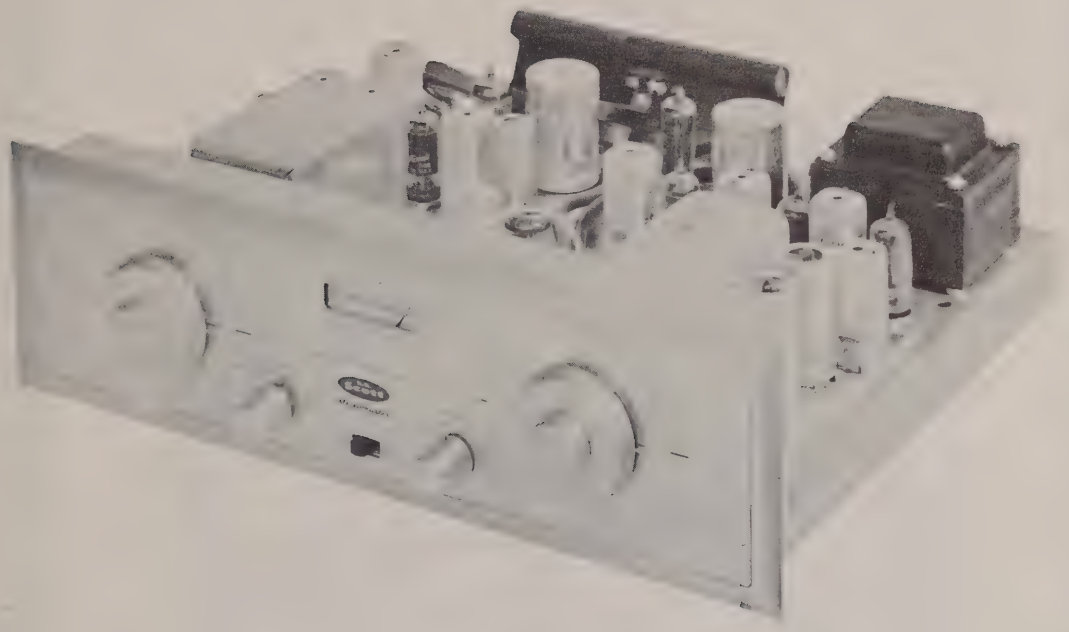
H. H. SCOTT MODEL 330-C (Late Version)

H. H. SCOTT MODEL
330-C (Late Version)



H. H. SCOTT MODEL
330-C (Late Version)

TRADE NAME	H. H. Scott Model 330-C (Late Version)
MANUFACTURER	Hermon Hosmer Scott, Inc., 111 Powder Mill Road, Maynard, Mass.
TYPE SET	AC Operated 12 Tube FM-AM Tuner
POWER SUPPLY	110-120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	540—1620KC RATING 45 Watts, .43 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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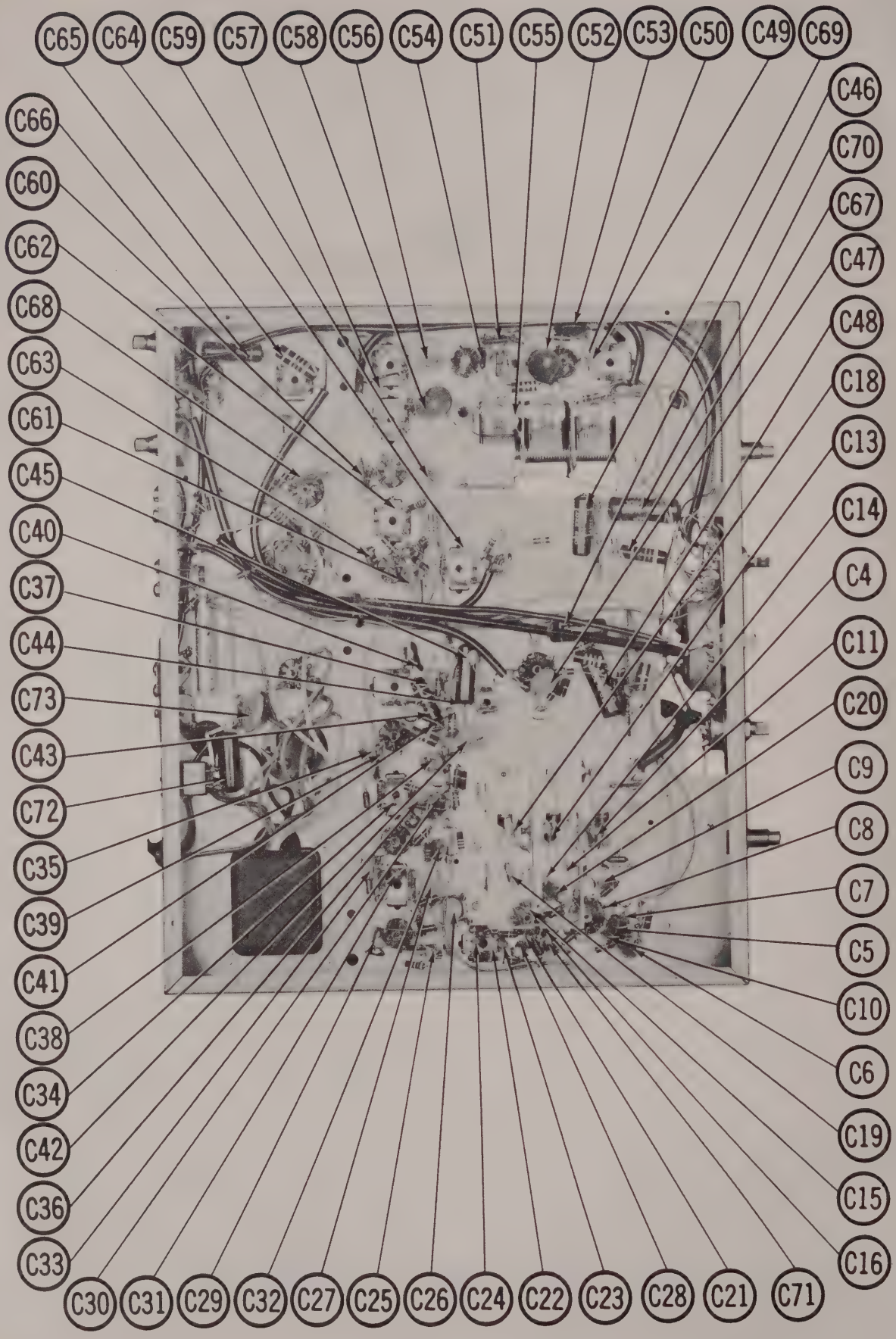
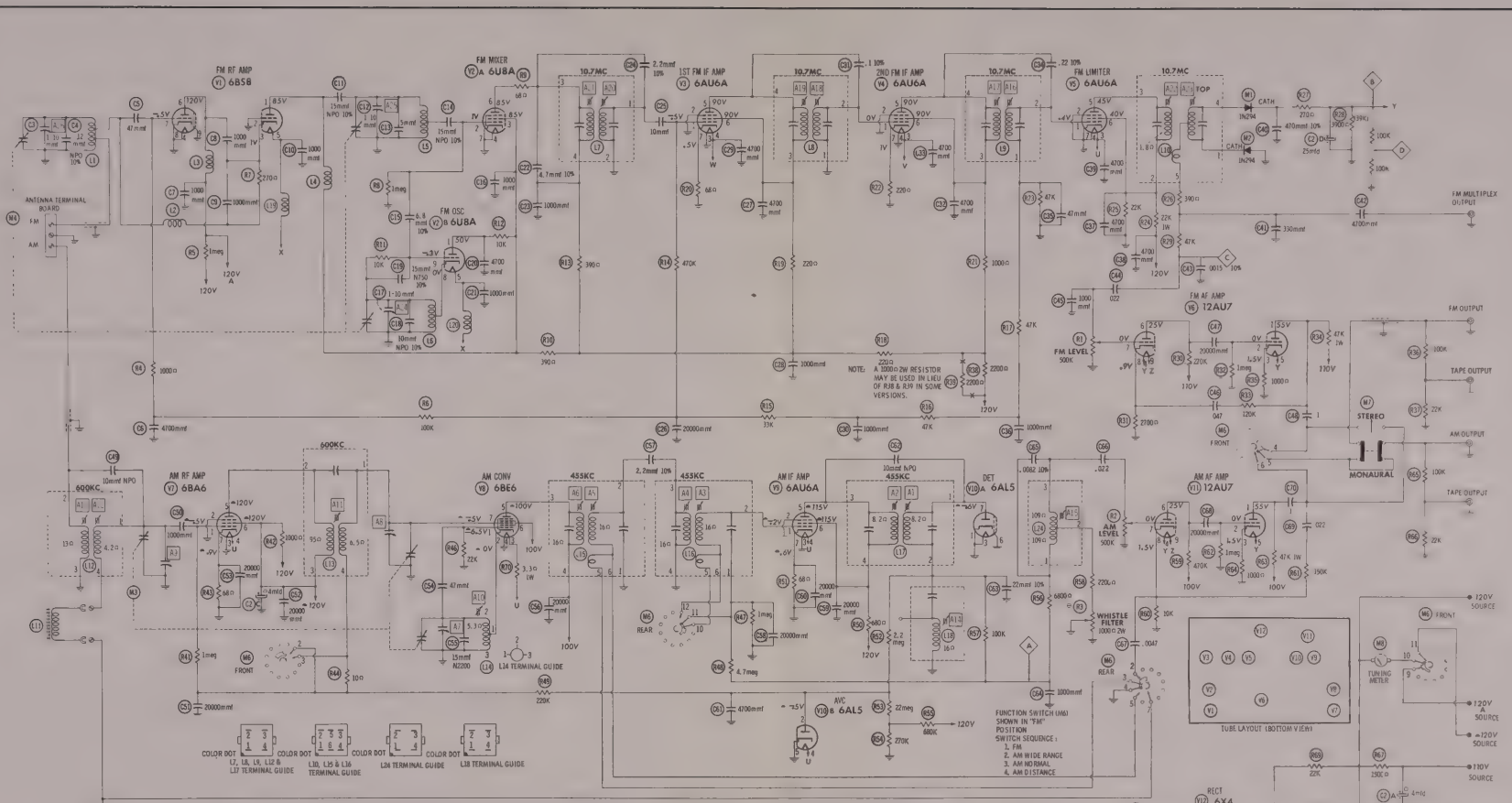


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	↑2700Ω	0Ω	270Ω	0Ω	.1Ω	↑1850Ω	275K	0Ω	0Ω
V2	6U8A	↑10K	1meg	↑2700Ω	0Ω	.1Ω	↑2800Ω	0Ω	0Ω	10K
V3	6AU6A	575K	0Ω	0Ω	.1Ω	↑2100Ω	↑2100Ω	68Ω		
V4	6AU6A	.5Ω	0Ω	.1Ω	0Ω	↑2600Ω	↑2600Ω	220Ω		
V5	6AU6A	47K	0Ω	1Ω	0Ω	↑18K	↑18K	0Ω		
V6	12AU7	↑48K	1meg	1000Ω	2000Ω	2000Ω	↑270K	0Ω	2700Ω	2000Ω
V7	6BA6	↓3.5meg	0Ω	0Ω	1Ω	↓↑1000Ω	↓↑1000Ω	68Ω		
V8	6BE6	22K	5Ω	1.7Ω	0Ω	↓↑3000Ω	↓↑3000Ω	↓2.5meg		
V9	6AU6A	↓850K	0Ω	0Ω	1Ω	↓↑1500Ω	↓↑1500Ω	68Ω		
V10	6AL5	0Ω	↓2.2meg	0Ω	.1Ω	0Ω	0Ω	↓100K		
V11	12AU7	↓↑50K	1meg	1000Ω	2000Ω	2000Ω	↓↑470K	0Ω	10K	2000Ω
V12	6X4	90Ω	NC	.1Ω	0Ω	NC	90Ω	¶		

NOTE: A 1000-2W RESISTOR MAY BE USED IN LIEU OF R38 & R39 IN SOME VERSIONS.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
↑ MEASURED IN "AM" POSITION.
↓ MEASURED FROM PIN 7 OF V12.
NC NO CONNECTION.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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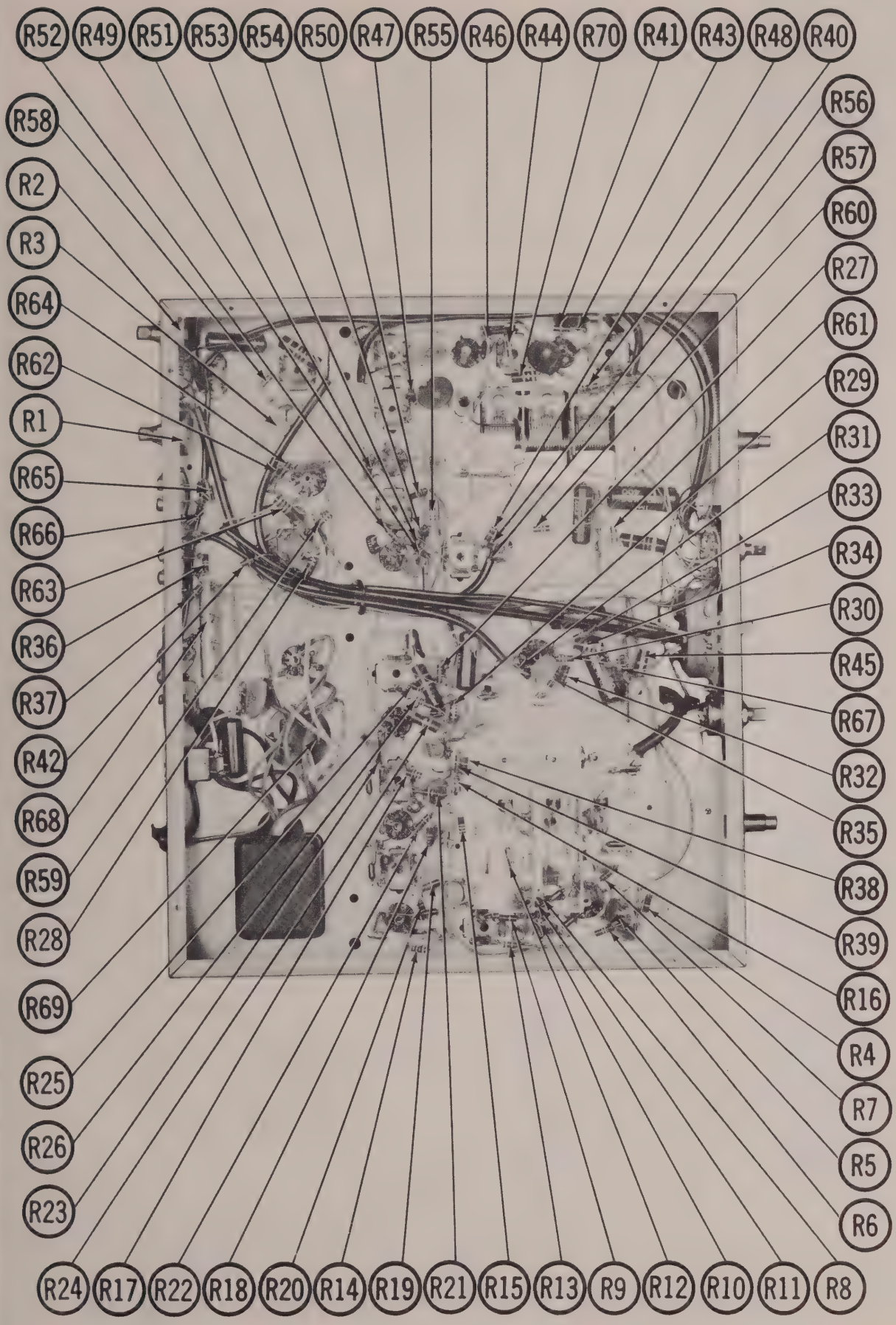
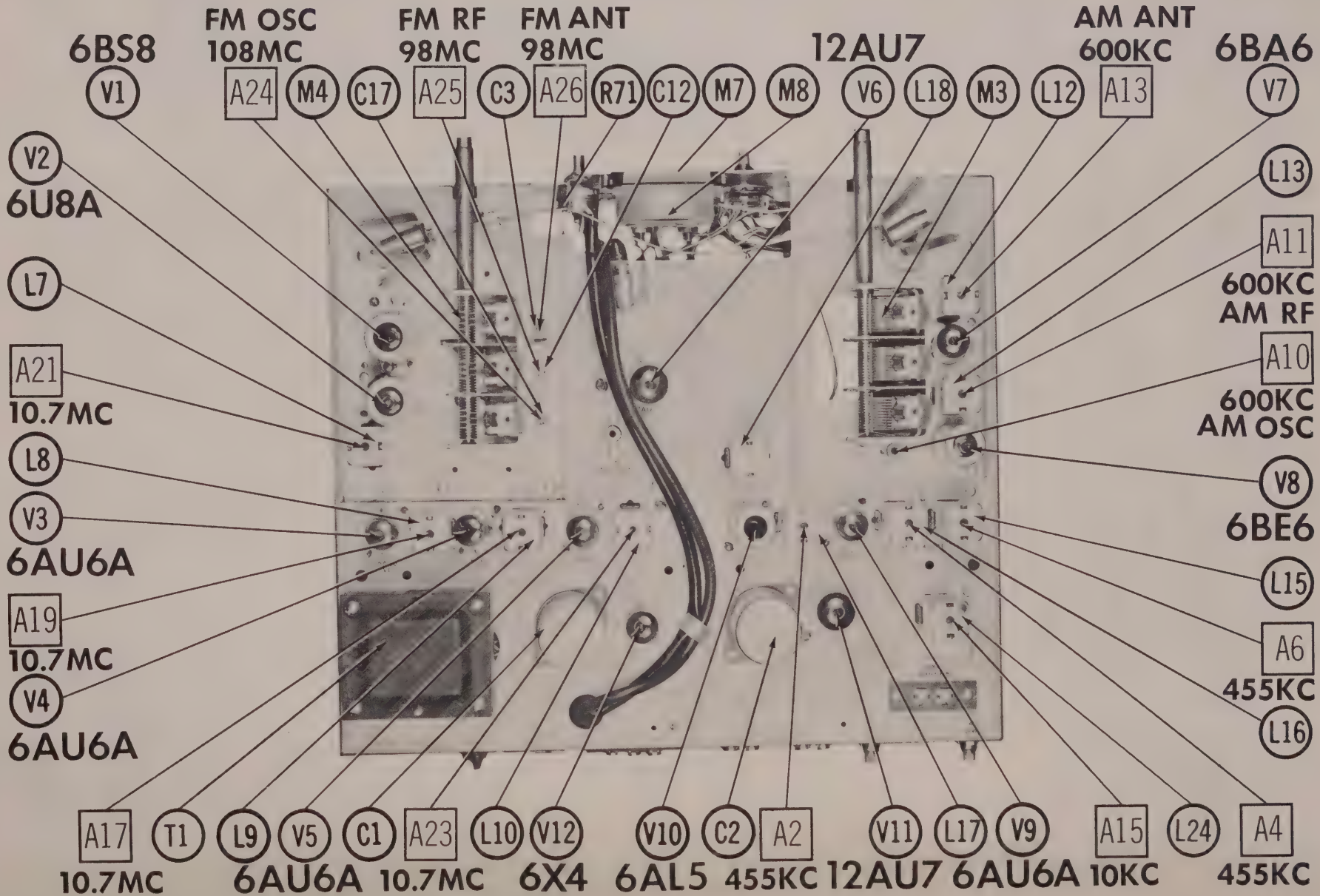
H. H. SCOTT MODEL 330-C (Late Version)



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading

Short pin 9 (grid) of FM Oscillator to chassis with a clip lead.

Suggested alignment tools:

A1 thru A6, A11 thru A23.....	GENERAL CEMENT #5097, 8727 WALSCO #2515
A7, A8, A9.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A10.....	GENERAL CEMENT #8606, 8606L, 8282, 9295 WALSCO #2526, 2543, 2544, 2545
A24, A25, A26.....	GENERAL CEMENT #8271, 8273, 8275, 8276, 8721, 8722, 9150, 9298, 5003 WALSCO #2516, 2519

AM ALIGNMENT — SET BAND SWITCH TO AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to antenna stator lug on AM tuning gang. Low side to chassis.	455KC (400∿ Mod.)	1600KC (AM Band)	DC probe to point (A). Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	Loop	1500KC	1500KC	"	A7, A8, A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A10, A11, A12, A13	"
4.	"	1400KC (10KC Mod.)	1400KC	AC probe across AM output.	A14, A15, R3	Short A15. Adjust A14 for MINIMUM deflection. Short A14. Adjust A15 and R3 for MINIMUM deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SET BANDSWITCH TO FM POSITION

Connect two matched 100K (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	Point of non-interference. (FM Band)	DC probe to point (B). Common to chassis.	A16, A17, A18, A19, A20, A21, A22	Adjust for maximum deflection.
6.	"	"	"	DC probe to point (C). Common to point (D).	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SET BANDSWITCH TO FM POSITION

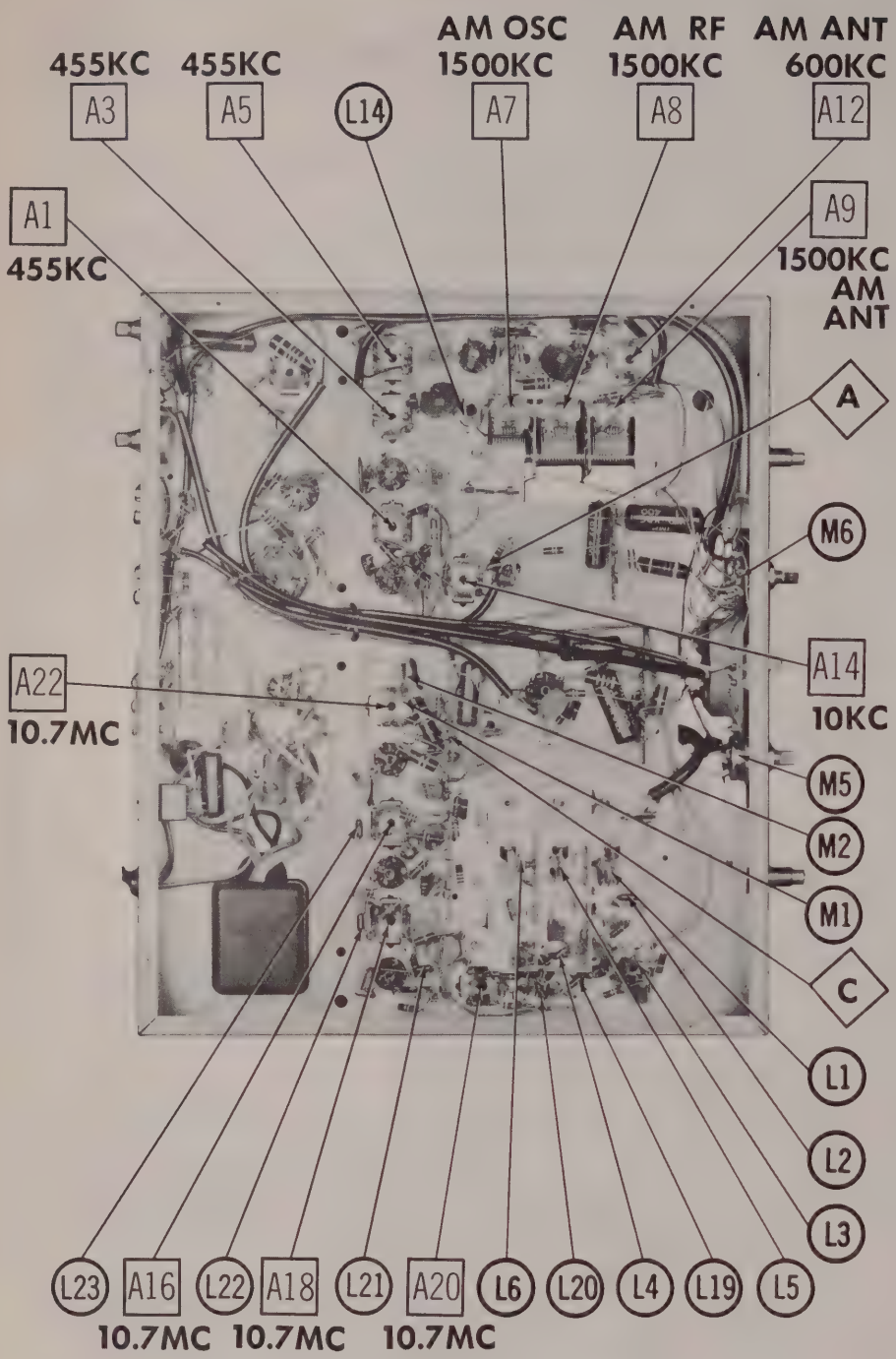
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	Point of non-interference. (FM Band)	Vert. amp. to point (B). Low side to chassis.	A16, A17, A18, A19, A20, A21, A22	Disconnect stabilizing capacitor C2D. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C2D.
6.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A23	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A22 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SET BANDSWITCH TO FM POSITION

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	108MC (FM Band)	DC probe to point (B). Common to chassis.	A24	Adjust for maximum deflection.
8.	"	92MC	92MC	"	L3	"
9.	"	98MC	98MC	"	A25, A26	"



CHASSIS BOTTOM VIEW -
ALIGNMENT, INDUCTOR & MISC. IDENT.

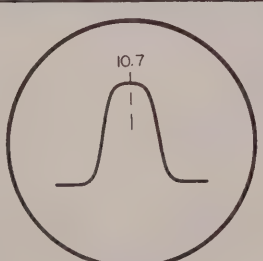


FIG. 1

FIG. 2

SCOPE ALIGNMENT FIGURES

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BS8 (6BQ7A) *	V7	AM RF Amplifier	6BA6
V2	FM Mixer-Osc.	6U8A	V8	AM Converter	6BE6
V3	1st FM IF Amplifier	6AU6A	V9	AM IF Amplifier	6AU6A
V4	2nd FM IF Amplifier	6AU6A	V10	AM Det. -AVC	6AL5
V5	FM Limiter	6AU6A	V11	AM AF Amplifier	12AU7
V6	FM AF Amplifier	12AU7	V12	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	H.H. SCOTT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	250	CEC-4X40/250			FP327.89	TMQ-116	TVLS-4581 *	
B	■40	250				TC58			
C	▲40	250							
D	40	250							
C2A	■4	250	CEC-3X4/250-25/25		D0070	WP433.6	TMQ-9	TVL-4759.7	
B	▲4	250			BBR25-25	TC26	TD-25-25	TVA-1205	
C	▲4	250							
D	25	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	1-10			829-10				
C4	12 NPO 10%			DTZ-10	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C5	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C6	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C12	1-10			829-10				
C13	5		NPO-DI 5	DD-050	C10V5C	CCTO-050	GP550	10TS-V50
C14	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C15	6.8 10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	1-10			829-10				

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C18	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C19	15 N750 10%		N750-DI 15	DTN-15	C10Q15U	CCTN-157	CN7-415	10TCU-Q15
C20	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C21	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C22	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C23	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C25	10		NPO-DI 10	DD-100	C10Q1C	CCD-100	CNO-410	10TS-Q10
C26	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-D20
C27	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C28	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C29	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C30	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C31	.1 10%	#CC-.1						
C32	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C33	4700		BPD-0047	DD-472	BYA0D47M	CCD-472	B-247	5HK-D47
C34	.22 10%	#CC-.22						
C35	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C36	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C37	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C38	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C39	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C40	470 10%		1469-00047	DD-471	5R5T47	CM-20B-471K	MCJ244	MS-347
C41	330		1468-00033	DD-331	5W5T33	CM-20B-331M	MC241	1FM-333
C42	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C43	.0015 400V 10%		V84C6D15 10%		PM6D15	6DP-1-152	GP215	6TM-D15
C44	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C45	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C46	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C48	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C49	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C50	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C52	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C53	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C54	47		1468-000047	DD-470	22R5Q47	CM-20B-470M	MC225	1FM-447
C55	15 N2200					*		
C56	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C57	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C58	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C59	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C60	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C61	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C62	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C63	22 10%		1469-000022	DD-220	22R5Q22	CM-20B-220K		MS-422
C64	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C65	.0082 400V 10%		P684CM-0082			6DP-2-822	GEM-16282	5BF-D82
C66	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C67	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C68	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C69	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C70	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C71	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C72	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C73	20000 900V		BPD-02	DD-203	CUB10S2	16DP-4-203	B-110	5HK-S20

H. H. Scott Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	H. H. SCOTT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	RCV-500K-P	BX-59	A47-500K-S	Q11-133	SU-50	FM Level
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R2A	500K	½	RCV-500K-P	BX-59	A47-500K-S	Q11-133	SU-50	AM Level
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R3	1000Ω	2(WW)	RWV-1K		39-1000	112-1000	FL-1K	Whistle Filter, Note 1

Note 1. Some versions may use 1500Ω in this application.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	1000Ω	
R5	1meg	
R6	100K	
R7	270Ω	
R8	1meg	
R9	68Ω	
R10	390Ω	
R11	10K	
R12	10K	
R13	390Ω	
R14	470K	
R15	33K	
R16	47K	
R17	47K	
R18	220Ω	
R19	220Ω	
R20	68Ω	
R21	1000Ω	
R22	220Ω	
R23	47K	
R24	22K 1W	
R25	22K	
R26	390Ω	
R27	270Ω	

ITEM No.	RATING	REMARKS
R28	3900Ω	(39K) *
R29	47K	
R30	270K	
R31	2700Ω	
R32	1meg	
R33	120K	
R34	47K 1W	
R35	1000Ω	
R36	100K	
R37	22K	
R38	2200Ω	(1000Ω 2W) *
R39	2200Ω	
R40	18Ω	
R41	1meg	
R42	1000Ω	
R43	68Ω	
R44	10Ω	
R45	2200Ω 1W	
R46	22K	
R47	1meg	
R48	4.7meg	
R49	220K	
R50	680Ω	
R51	68Ω	

ITEM No.	RATING	REMARKS
R52	2.2meg	
R53	22meg	
R54	270K	
R55	680K	
R56	6800Ω	
R57	100K	
R58	2200Ω	
R59	470K	
R60	10K	
R61	150K	
R62	1meg	
R63	47K 1W	
R64	1000Ω	
R65	100K	
R66	22K	
R67	1500Ω	
R68A	250Ω	
B	250Ω	
C	250Ω	
R69	22K	
R70	3.3Ω 1W	
R71	18Ω	

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		H. H. SCOTT PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil							
L2	RF Choke							1.2uh
L3	RF Choke		19-2004	19-2004		4586		.33uh
L4	RF Choke		19-1000	19-1000	BC-561	4602		luh
L5	FM RF Coil							
L6	FM Osc. Coil							

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		H. H. SCOTT PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L7	1st FM IF	TRV-10.7-IF	16-3487	16-3487	FM-254	1463		
L8	2nd FM IF	TRV-10.7-IF	16-3487	16-3487	FM-254	1463		
L9	3rd FM IF	TRV-10.7-IF	16-3487	16-3487	FM-254	1463		
L10	Ratio Detector	TRV-10.7-D	17-3498	17-3498	FM-255	1465		
L11	Loopstick	Z-ANT-AM						
L12	AM Ant. Coil	TRV-AM-A						
L13	AM RF Coil	TRV-AM-M						
L14	AM Osc. Coil				BC-393	70-OSC		
L15	1st AM IF	TRVS-455-IF						
L16	2nd AM IF	TRVS-455-IF						
L17	3rd AM IF	TRV-455-D	16-6758	16-6758	BC-353	12-C2	RF-2	
L18	AM IF Trap	TRV-455-T						
L19	Fil. Choke		19-1000	19-1000	BC-561	4602		luh
L20	Fil. Choke		19-1000	19-1000	BC-561	4602		luh
L21	Fil. Choke		19-1000	19-1000	BC-561	4602		luh
L22	Fil. Choke		19-1000	19-1000	BC-561	4602		luh
L23	Fil. Choke		19-1000	19-1000	BC-561	4602		luh
L24	10KC Filter	TRV-01-T						

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	H. H. SCOTT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .43A	400 VCT @ .065A	5V @ .6A	TR7-1						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 3.4A									

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		H. H. SCOTT PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M1	1N294	D-1N294	1N60	1N295	1N294	Ratio Detector (Pigtail)
M2	1N294	D-1N294	1N60	1N295	1N294	Ratio Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	H. H. SCOTT PART No.	NOTES
M3	Tuning Cap	Z-AM-1	AM 3 Gang (Ant. 23—385mmf, RF. 19—380mmf, Osc. 35—235mmf)
M4	Tuning Cap	Z-FM-1	FM 3 Gang
M5	Switch	SPR-11	Power On-Off
M6	Switch	SRW-54	Function Selector
M7	Switch	SS-22	Monaural-Stereo (DPDT, Slide Type)
M8	Meter	M-SS-3	Tuning

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	N-D-AM-2	AM
Dial	N-D-FM-2	FM

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

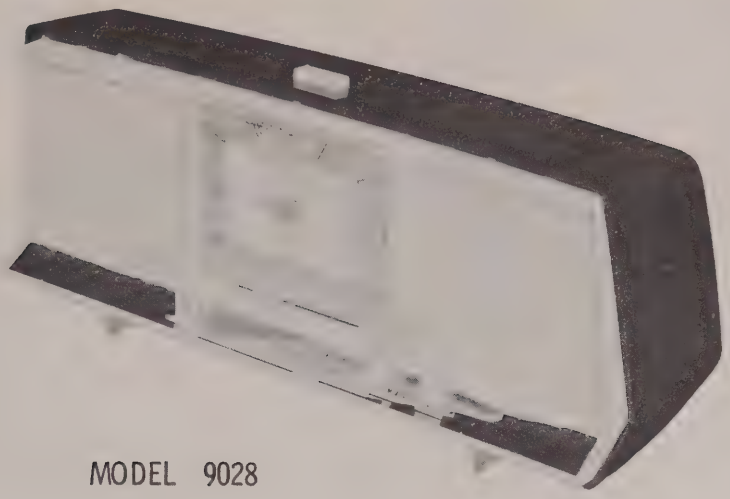
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SILVERTONE CHASSIS 528.53610, 528.53700, 528.53730

SILVERTONE CHASSIS 528.53610, 528.53700, 528.53730



MODEL 9028

TRADE NAME	Silvertone Models 39, 40, 41 (Ch. 528.53610); 42, 43, 44, 45 (Ch. 528.53700); 9027, 9028, 9029 (Ch. 528.53730)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated 6 Tube AM Receiver With Electric Clock
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	29 Watts, .32 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	532 — 1620KC

ALIGNMENT INSTRUCTIONS

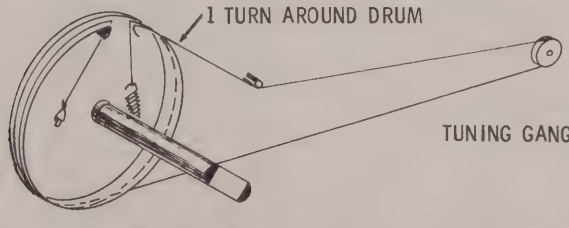
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A^6, A7..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A8, A9..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	532KC	Tuning gang fully closed.	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	Tune to 1400KC signal.	"	A8, A9	"

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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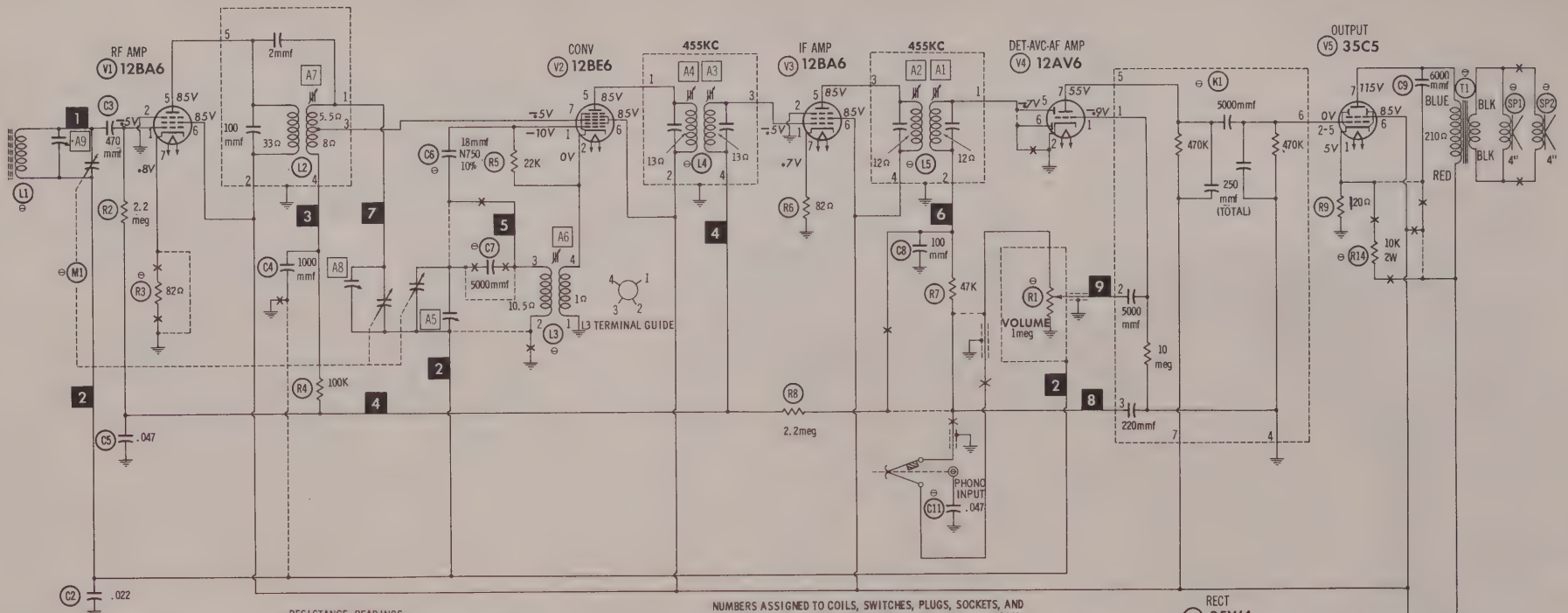


RESISTANCE READINGS

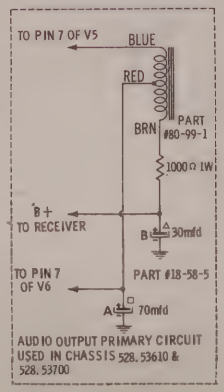
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	5.5meg	0Ω	36Ω	24Ω	†1000Ω	†1000Ω	82Ω
V2	12BE6	22K	1.3Ω	24Ω	12Ω	†1000Ω	†1000Ω	3.3meg
V3	12BA6	3.2meg	0Ω	36Ω	48Ω	†1000Ω	†1000Ω	82Ω
V4	12AV6	10meg	0Ω	12Ω	0Ω	1meg	0Ω	†470K
V5	35C5	120Ω	470K	48Ω	83Ω	470K	†1000Ω	†210Ω
V6	35W4	NC	TP	83Ω	120Ω	115Ω	115Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V6.
NC NO CONNECTION.
TP TIE POINT.

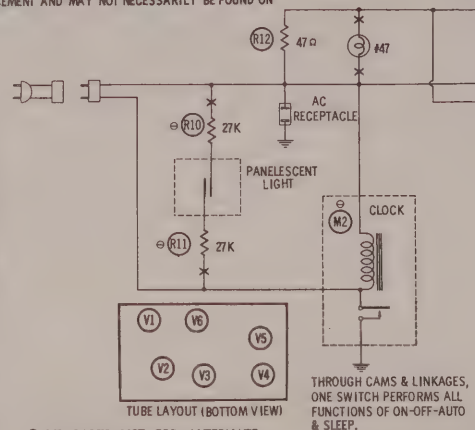
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

L4 & L5 TERMINAL GUIDE

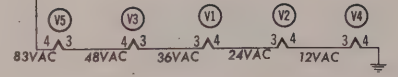


AUDIO OUTPUT PRIMARY CIRCUIT USED IN CHASSIS 528.53610 & 528.53700



TUBE LAYOUT (BOTTOM VIEW)

THROUGH CAMS & LINKAGES, ONE SWITCH PERFORMS ALL FUNCTIONS OF ON-OFF-AUTO & SLEEP.



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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SILVERTONE CHASSIS 528.53610, 528.53700, 528.53730

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆	RAYTHEON ◆	SYLVANIA ◆

ITEM No.	USE	TYPE
V1	RF Amplifier	12BA6
V2	Converter	12BE6
V3	IF Amplifier	12BA6
V4	Det. -AVC-AF Amp.	12AV6
V5	Output	35C5
V6	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Silvertone PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪70	150	18-58-5	PWH2-17-50	XB0181 ‡	PFP214.3		PCL-2441	
B	▲30	150							

‡ Use printed circuit adaptor #55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.022 400V		P488N-022		CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C3	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C6	18 N750 10%	Note 1		TCN-20	C10Q18U		CN7-418	10TCC-Q18
C7	5000	Note 2	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C8	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	5GA-T10
C9	6000				HVE16D6	6DP-1-602	B-260	6TM-D6
C10	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C11	.047 400V	Note 3	P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

Note 1. Chassis 528.53610 & Chassis 528.53700 uses 47mmf in this application.
Note 2. Not used in Chassis 528.53610 & 528.53700.
Note 3. Not used in Chassis 528.53610.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Silvertone PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	24-317-0①	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

① Chassis 528.53700 uses part #24-352-0.
Chassis 528.53610 uses part #24-347-0.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	82Ω	Note 1
R4	100K	
R5	22K	
R6	82Ω	

ITEM No.	RATING	REMARKS
R7	47K	
R8	2.2meg	
R9	120Ω	
R10	27K	Note 1
R11	27K	Note 1

ITEM No.	RATING	REMARKS
R12	47Ω	
R13	1000Ω 1W	
R14	10K 2W	

Note 1. Not used in Chassis 528.53610 , 528.53700.

COMPONENT COMBINATIONS

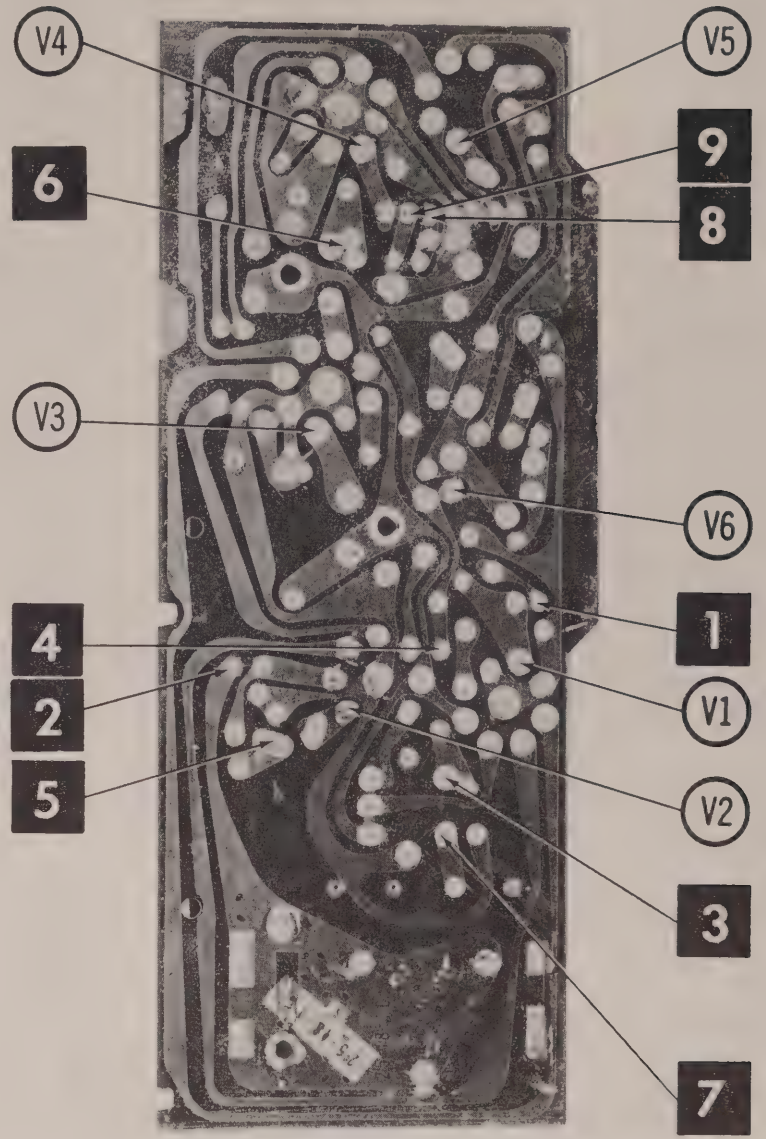
ITEM No.	USE	DESCRIPTION	Silvertone PART No.	REPLACEMENT DATA
K1	Audio Coupling	220mmf, 250mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 10meg	13-14-3 ①	Aerovox PA-306 Centralab PC-158 Sprague DT-6

① Part #13-32-3 used in Models 39, 40, 41.

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Silvertone PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	82-148-0 †						
L2	RF Trans.	10-26-0						
L3	Osc. Coil	10-35-4 ††						
L4	Input IF	10-94-2 ‡	16-6780	16-6780	BC-356	13-PC1	RF-4	
L5	Output IF	10-95-2 ‡ ‡	16-6780	16-6780	BC-357	13-PC2	RF-4	

† Chassis 528.53610 uses Part #82-11-1 in this application.
†† Chassis 528.52610, .53700 uses Part #10-56-4 in this application.
‡ Chassis 528.53610, .53700 uses Part #10-84-2 in this application.
‡‡ Chassis 528.53610, .53700 uses Part #10-74-2 in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Silvertone PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	80-67-1①	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

① Part #80-107-1 used in Models 39, 40, 41.
Part #80-99-1 used in Models 42, 43, 44, 45

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Silvertone PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	33-363-4①	4A07Z6.4	① Models 9027, 9028, & 9029, 42, 43, 44, & 45
SP2	4"	PM	6-8Ω	33-364-4①②	4A07Z6.4	② Includes T1
				33-421-4③		③ Models 39, 40, & 41
				33-420-4④		④ Models 42, 43, 44, 45 (Includes T1)

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M1	Tuning Cap	19-27-3	2 Gang, Chassis 528.53730
	Tuning Cap	19-30-3	2 Gang, Chassis 528.53700
	Tuning Cap	19-29-3	2 Gang, Chassis 528.53610
M2	Clock	59-133	Includes Hands & Panelescent Light, Chassis 528.53730
	Clock	59-149	Chassis 528.53610
	Clock	59-151	Chassis 528.53700

CABINETS & CABINET PARTS

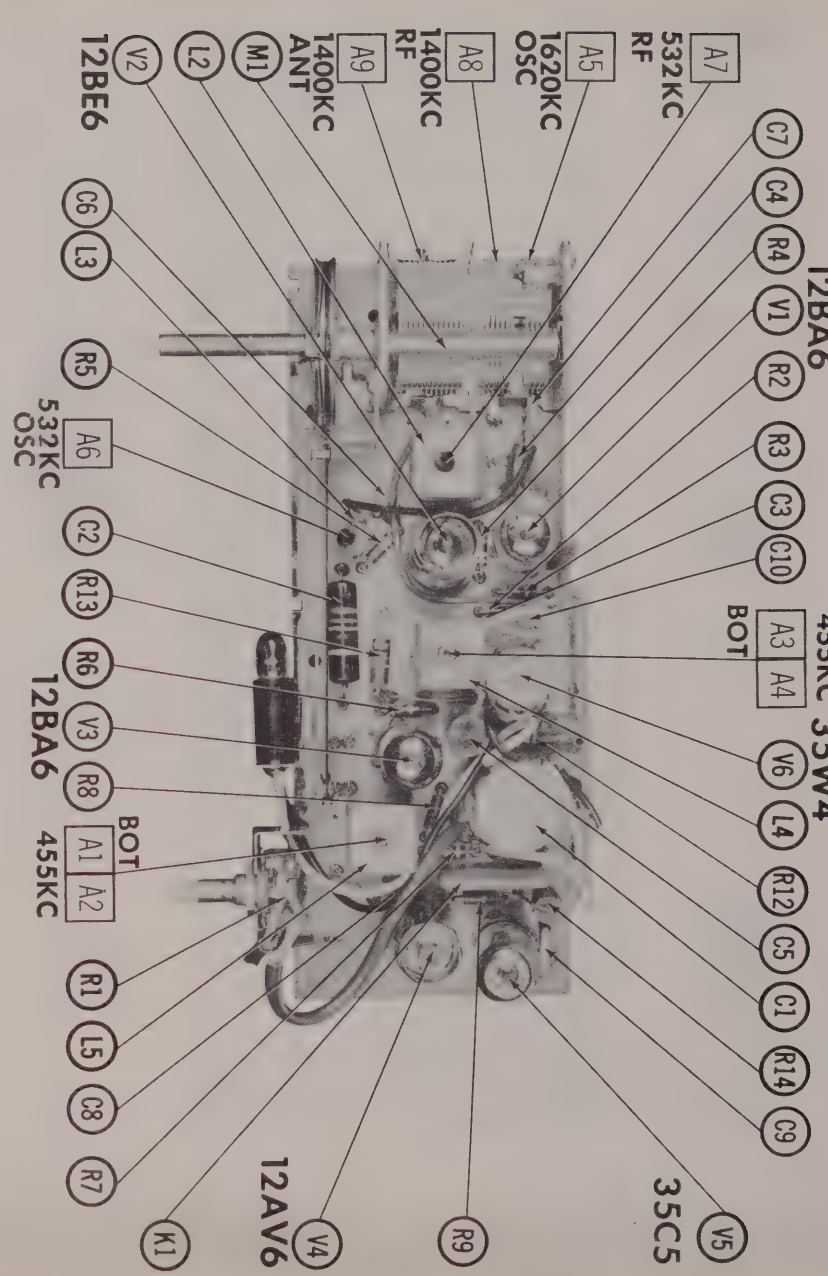
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1093-0	Tuning & Volume, Models 9027, 9028, 9029, 39, 40, 41
Knob	52-1252-0	Tuning & Volume, Models 42, 43, 44, 45
Knob	52-1057-0	Timer, Models 9027, 9028, 9029
Knob	52-784-0	Timer, Models 39, 40, 41
Pushbutton	52-1253-0	4 Used, Model 42, 43, 44, 45
Pointer	52-62-1	Models, 9027, 9028, 9029
Pointer	52-183-1	Models 39, 40, 41
Pointer	52-207-1	Models 42, 43, 44, & 45
Dial Scale	67-650-0	Includes Trim Strip, Models 9028, 9027, 9029
Window	48-157-1	Timer, Models 9027, 9028, 9029
Window	48-162-1	Timer, Models 39, 40, 41
Window	48-165-1	Timer, Models 42, 43, 44, 45

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW



PHOTOFACT® Folder

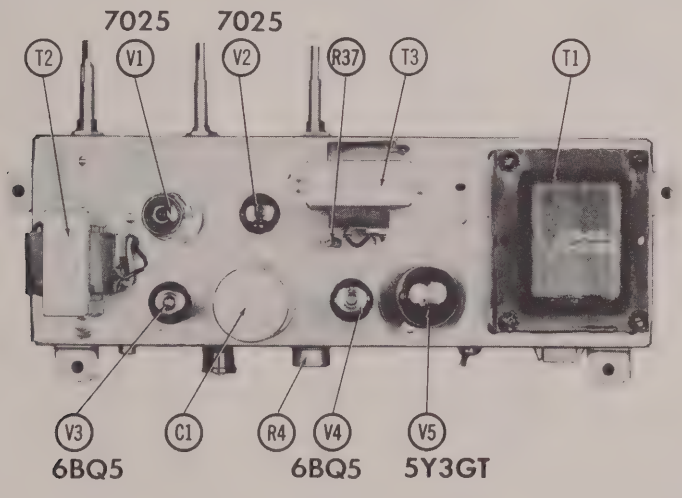
SILVERTONE MODELS 274, 275, 276, 297 (Ch. 528.59390)

SILVERTONE MODELS 274, 275, 276, 297 (Ch. 528.59390)

MODEL 274

TRADE NAME	Silvertone Models 274, 275, 276 (Ch. 528.59390); 297 Remote Control
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated 5 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 72 Watts, .73 Amp. @ 117 Volts AC

SILVERTONE RECORD CHANGER 528.56660 OR 528.56661



SILVERTONE MODELS 274, 275, 276, 297 (Ch. 528.59390)

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JT590

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	7025
V2	Left Channel AF Amp. - Right Channel AF Amp.	7025
V3	Left Channel Output	6BQ5
V4	Right Channel Output	6BQ5
V5	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	350	18-43-3	AFH4-58-75	CO232 ‡	FP420.4	TMT-39	TVL-4635.7	
B	■40	350			BR2035		TD-60-350		
C	▲40	350							
D	20	350							
C2	4	150	18-9-5	NP-PRS7750	BBR8-150	TCN510		TVAS-1402.1*	

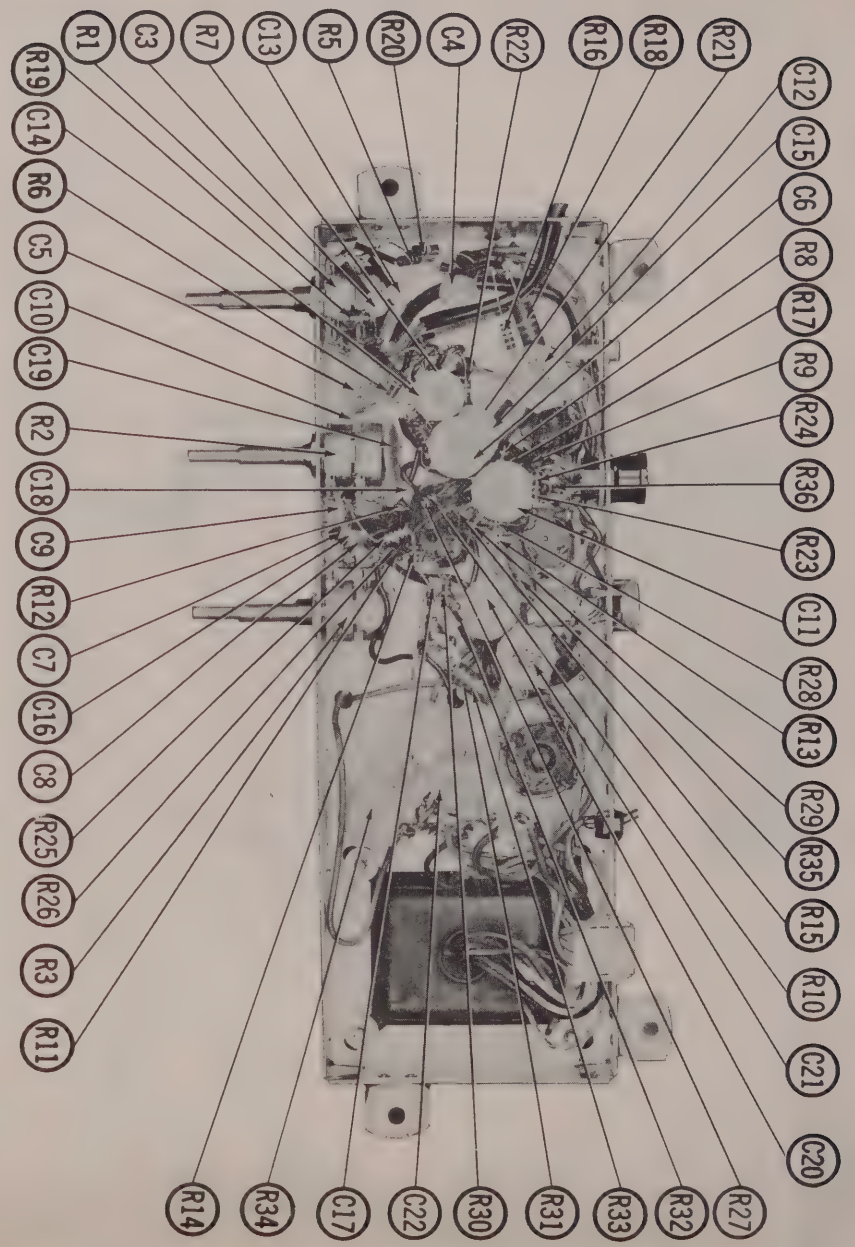
‡ Use printed circuit adaptor #55277 and 55278.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C4A	5000		BPD-2X0047	DD3-502	BYD60D5	CCD-502	B2X250	5HK-2D47
B	5000					CCD-502		
C5	5000 10%		DI-5000		PM6D5	6DP-1-502	JL-250	10TS-D50
C6	10000 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C7	150 N750 10%		N750-DI 150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15
C8	1000 10%		DI-1000	DD-102	PM6D1	CCS-102	GP210	10TS-D10
C9	1000 10%		DI-1000	DD-102	PM6D1	CCS-102	GP210	10TS-D10
C10	10000 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C11	10000 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C12	5000 3000V				CUB60D5		GEM-3025	TVM-256
C13	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C14	5000 10%		DI-5000		PM6D5	6DP-1-502	JL-250	10TS-D50
C15	10000 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C16	150 N750 10%		N750-DI 150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15
C17	1000 10%		DI-1000	DD-102	PM6D1	CCS-102	GP210	10TS-D10
C18	1000 10%		DI-1000	DD-102	PM6D1	CCS-102	GP210	10TS-D10
C19	10000 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C20	10000 10%		DI-10000		PM6S1	6DP-2-103	GEM-1611	10TS-S10
C21	5000 3000V				CUB60D5		GEM-3025	TVM-256
C22	20000 1000V		BPD-02		BYB6S2	CCD-203	GP120	5HK-S2

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	1/2	24-349-0					Loudness, Left Channel
	1meg Tap							
B	2meg	1/2						Stereo Balance, Right Chann
	1meg Tap							
R2A	1meg	1/2	24-189-2	AB-69	AD47-1meg-S	Q11-137		Bass, Left Channel
B	1meg	1/2		SR-69	Not Req.	M11-137		Bass, Right Channel
C	Shaft			AK-8	RS-3/16	NQ		
R3A	500K	1/2	24-188-2	AB-60	AD47-500K-Z	Q13-133		Treble, Left Channel
B	500K	1/2		SR-60	Not Req.	M13-133		Treble, Right Channel
C	Shaft			AK-8	RS-3/16	NQ		
R4	200Ω	1(WW)	24-1-3				FL200P	Hum Balance

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	33-282-1	12A6PA	
SP2	4"	PM	6-8Ω	33-410-4	4A07Z7.9	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	SILVERTONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	33-331-0	* 13TB	Not Req.	*26S	Not Req.			*8TA4-S	N-8TA-S

* Includes Mounting.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	100K	
R6	390K	
R7	270K	
R8	1000Ω	
R9	10K	
R10	330K	
R11	47K	
R12	22K	
R13	270K	
R14	27K	(12K, 47K) *
R15	2700Ω	

* Alternate Value

ITEM No.	RATING	REMARKS
R16	470K	
R17	100K	
R18	120Ω 2W	
R19	1meg	
R20	100K	
R21	390K	
R22	270K	
R23	1000Ω	
R24	10K	
R25	330K	
R26	47K	

ITEM No.	RATING	REMARKS
R27	22K	
R28	270K	
R29	2700Ω	
R30	27K	(12K) *
R31	470K	
R32	100K	
R33	120Ω 2W	
R34	350Ω 10W	
R35	2200Ω 2W	
R36	47K	
R37	220Ω 1W	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2	83-125-0 † (78 RPM)	W-101STS † or W-101STD ♦	E98 † or E98D ♦	† Jewel ♦ Diamond
	83-1252 † (LP)	W-102S † or W-102MGS † or W-102MGD ♦	E98X † or E98XD ♦	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .73A	640 VCT @ .090A	5V@ 2A	80-30-0 ①	22R06			PM8422	22R06	R-14B
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 2.1A									

① Alternate Part #80-31-0.

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	69-282-0	Stereo-Monaural (SPDT, Slide Type) (Part of Changer)
M4	Switch	84-6552	Off-On (Part of Changer)
M5	Motor	59-72	Complete (Chassis 528, 56660)
	Motor	59-89	Complete (Chassis 528, 56661)

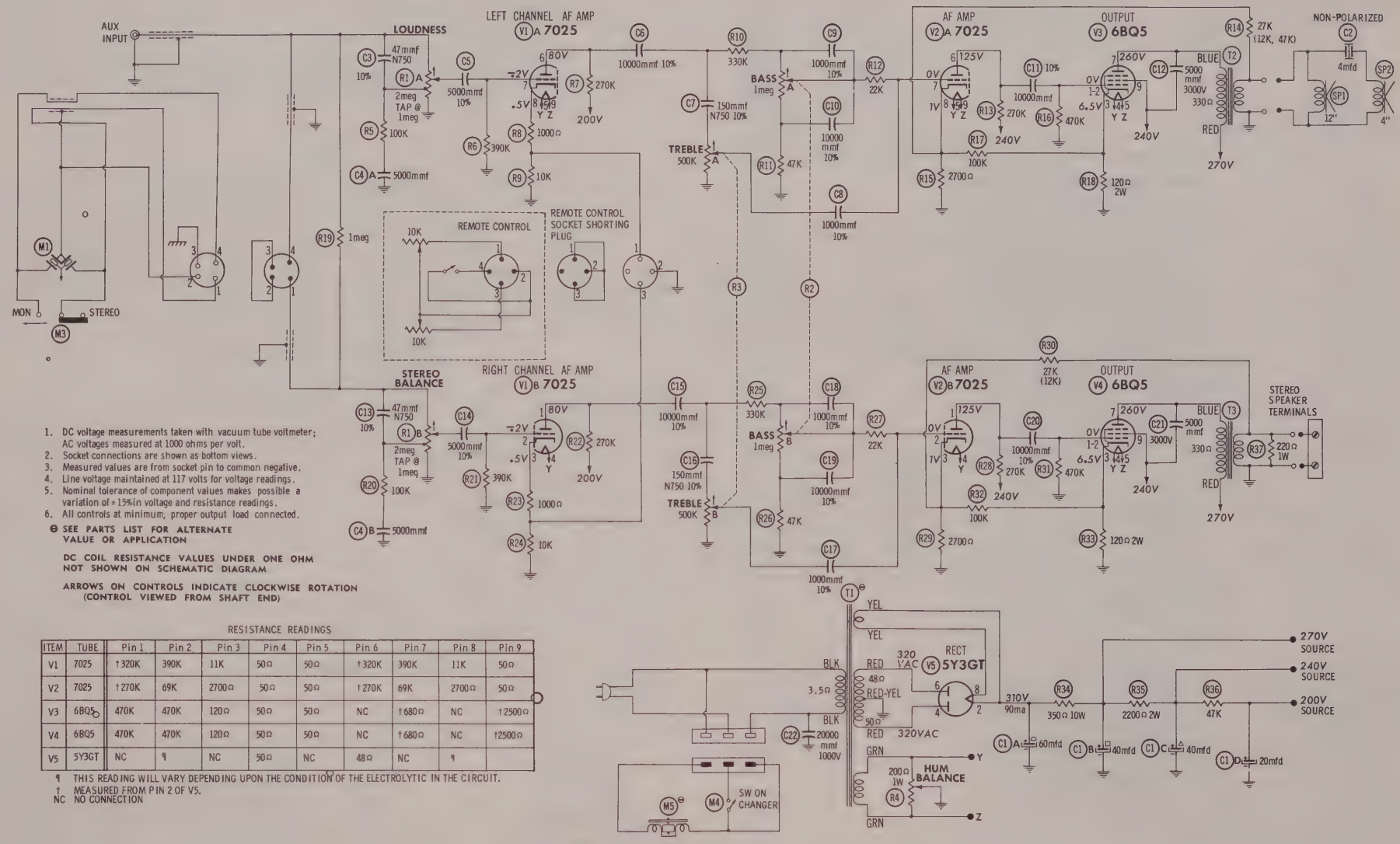
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5000Ω CT	6-8Ω	80-98-1	24S17	A-2904	AU-600	A-3823	24S17	S-55Z	
T3	5000Ω CT	6-8Ω	80-98-1	24S17	A-2904	AU-600	A-3823	24S17	S-55Z	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1266-0	Loudness
Knob	52-1245-0	Balance
Knob	52-1144-0	Tone
Knob	52-1237-0	On-Off-Reject
Knob	52-1238-0	Speed Control
Cabinet	42-103-2	Mahogany, Model 274
Cabinet	42-104-2	Limed Oak, Model 275
Cabinet	42-105-2	Fruitwood, Model 276
Leg	49-496	Mahogany, Model 274
Leg	49-497	Limed Oak, Model 275
Leg	49-498	Fruitwood, Model 276



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	†320K	390K	11K	50Ω	50Ω	†320K	390K	11K	50Ω
V2	7025	†270K	69K	2700Ω	50Ω	50Ω	†270K	69K	2700Ω	50Ω
V3	6BQ5	470K	470K	120Ω	50Ω	50Ω	NC	†680Ω	NC	†2500Ω
V4	6BQ5	470K	470K	120Ω	50Ω	50Ω	NC	†680Ω	NC	†2500Ω
V5	5Y3GT	NC	¶	NC	50Ω	NC	48Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V5.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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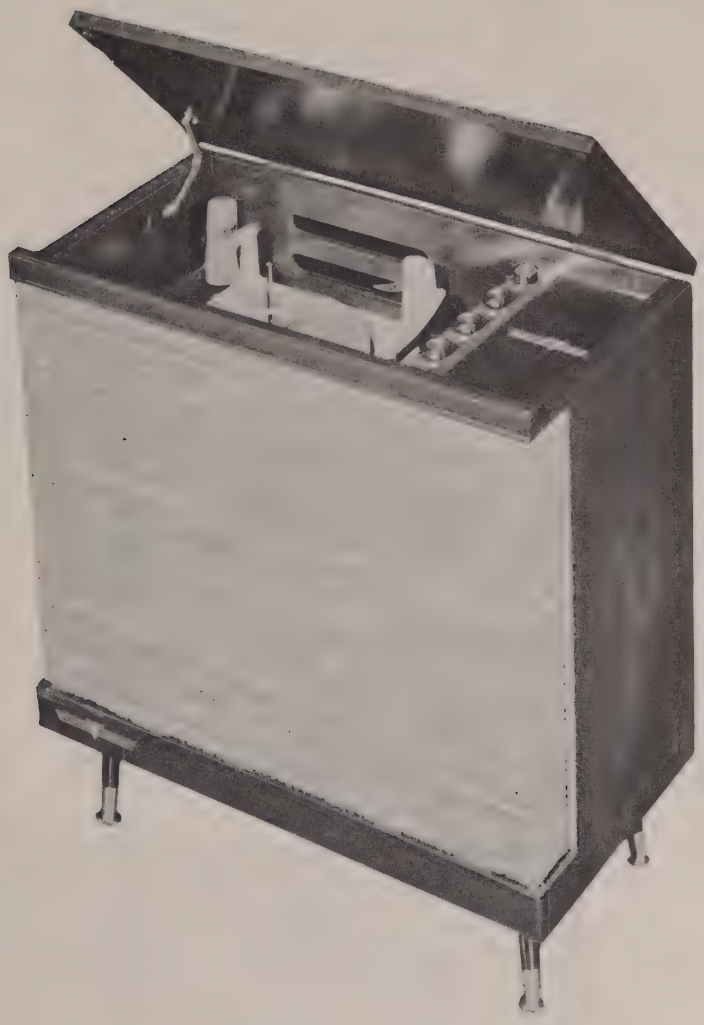
SILVERTONE MODELS 274, 275, 276, 297 (Ch. 528.59390)

PHOTOFACT® Folder

EIA MEMBER

TRAV-LER MODEL 1110

TRAV-LER
MODEL 1110



TRAV-LER
MODEL 1110

TRADE NAME	Trav-Ler Model 1110
MANUFACTURER	Trav-Ler Radio Corp., 571 W. Jackson, Chicago 6, Illinois
TYPE SET	AC Operated 6 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-125 Volts AC, 60 Cycles RATING 64 Watts, .63 Amp. @ 117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #RC-35 - SEE SIMILAR MONARCH UA8 - PHOTOFACT SET 381 FOLDER 11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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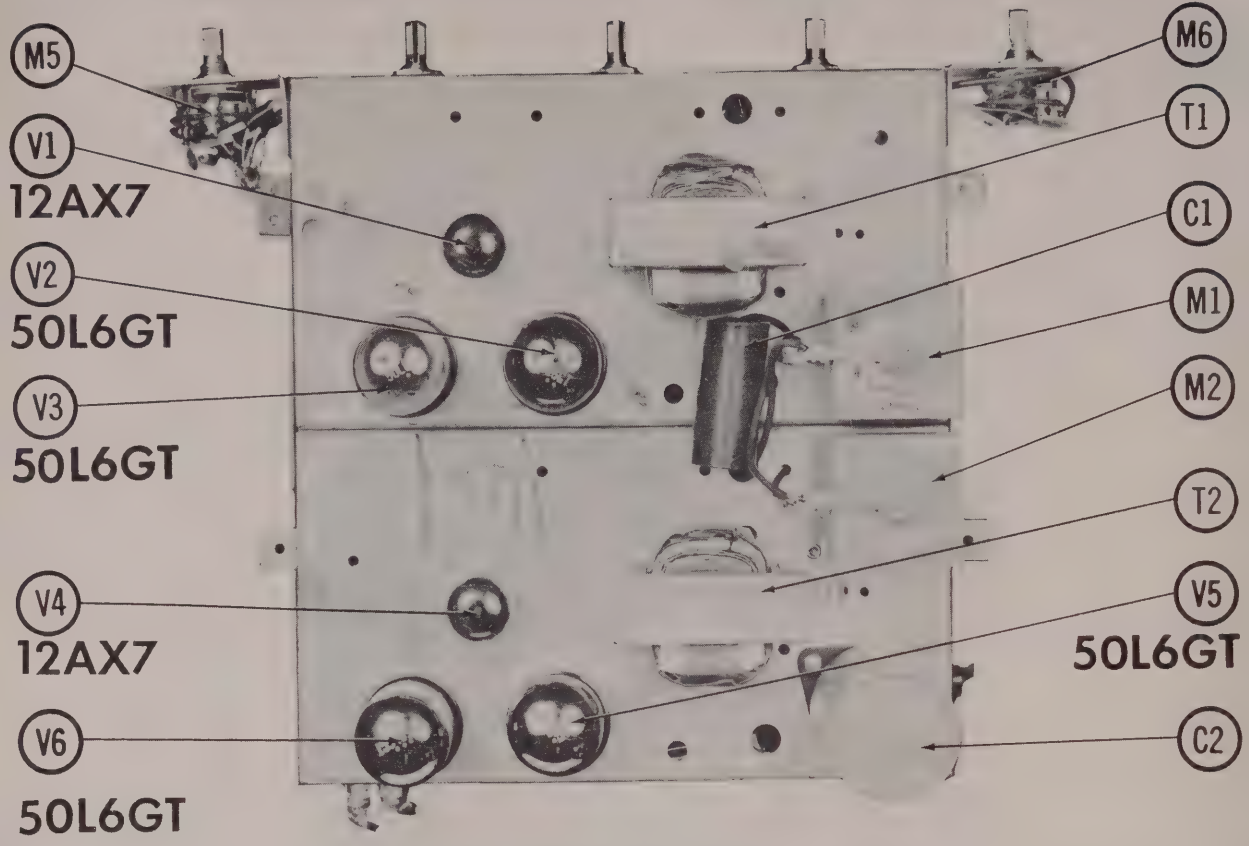
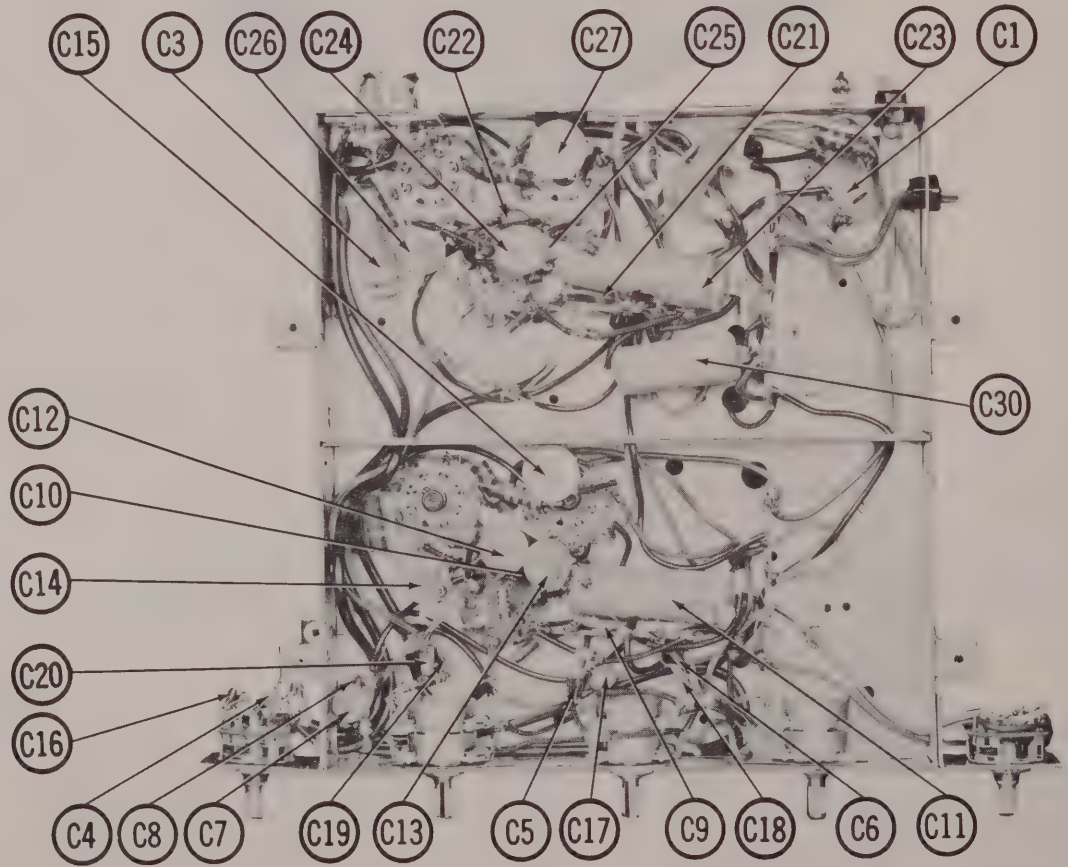
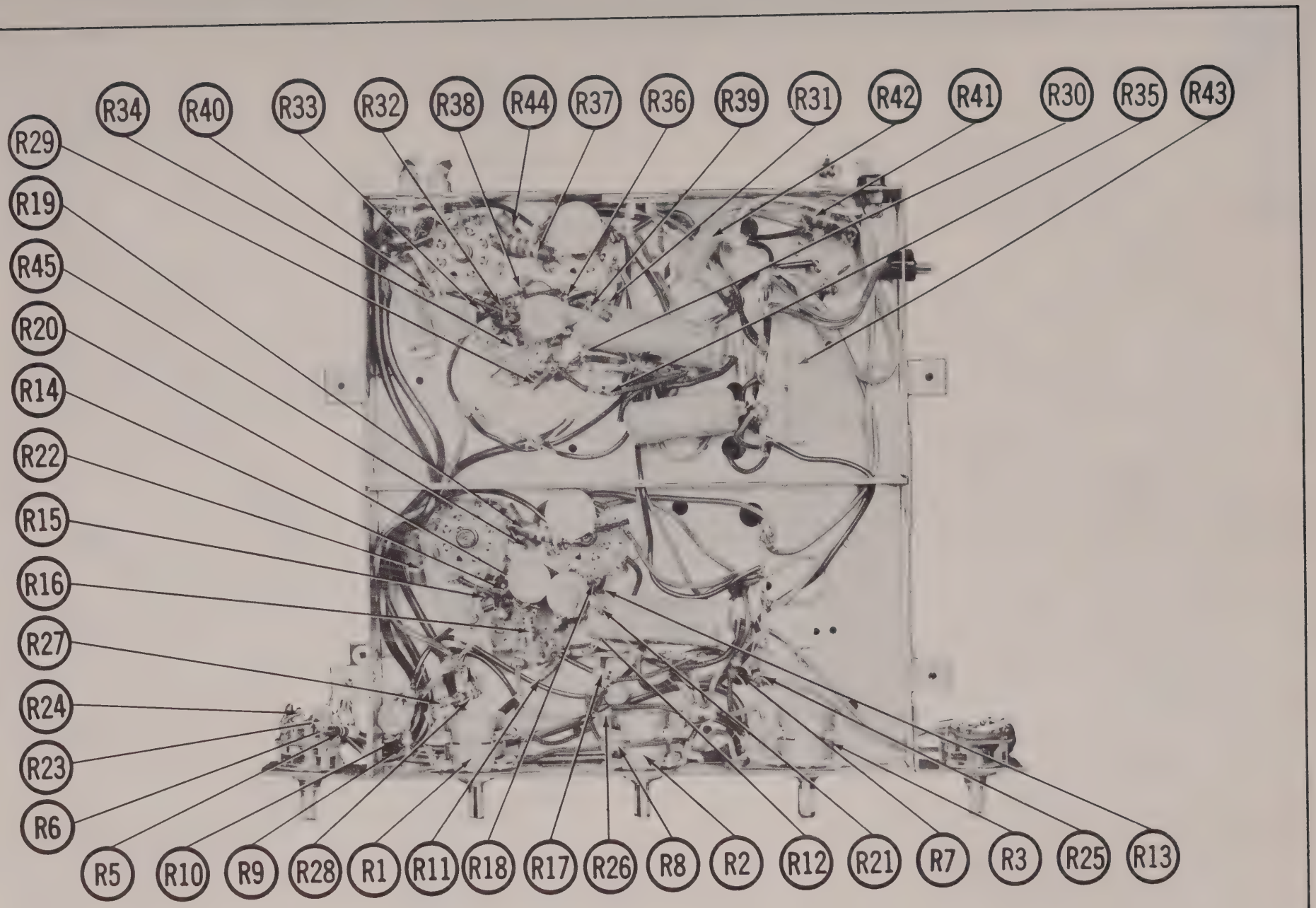


CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel 1 AF Amplifier - Channel 1 Phase Inverter	12AX7
V2	Channel 1 Output	50L6GT
V3	Channel 1 Output	50L6GT
V4	Channel 2 AF Amplifier - Channel 2 Phase Inverter	12AX7
V5	Channel 2 Output	50L6GT
V6	Channel 2 Output	50L6GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	20	300	EC-70	PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C2A	40	300	EC-69	AFH3-44	C0350	FP327. 89	TMT-23	TVL-3787	
B	40	300							
C	40	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C4	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C5	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C6	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C7	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C8	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-100	CN7-310	10TCU-T10
C11	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C12	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C16	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C17	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C18	680 10%		DI-680	DD-680	1R5T68	CCD-681	GP368	10TS-T68
C19	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20
C20	2000 10%		DI-2000		PM6D2	CCD-202	GP220	10TS-D20

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-100	CN7-310	10TCU-T10
C23	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C28	2mfd 50V		P292ZN-2.0		WMF1W2E			118P20502S2
C29	2mfd 50V		P292ZN-2.0		WMF1W2E			118P20502S2
C30	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg *	1/2	VC-152					Loudness, Channel 1
B	3meg *	1/2						Loudness, Channel 2
R2A	250K †	1/2	VC-151				■ UE4007	Treble, Channel 1
B	250K †	1/2						Treble, Channel 2
R3A	2meg	1/2	VC-153	B-75	AD47-2meg-S	Q11-139		Bass, Channel 1
B	2meg	1/2		SR-75	Not Req.	M11-139	▲ UE1878	Bass, Channel 2
C	Shaft	-		Not Req.	KSS-3	Not Req.		
R4A	5meg	1/2	VC-154					Phono Input Balance, Chan. 2
B	5meg	1/2						Phono Input Balance, Chan. 1

* Taps @ 1meg, 2meg † Taps @ 125K

■ "STA-LOC" Equivalent: FA254T1253, RU254T1253, CS3500.

▲ "STA-LOC" Equivalent: FA26L, RU26L, CS3500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	180K	
R6	510K	(470K) *
R7	100K	
R8	33K	
R9	100K	
R10	100K	
R11	2.2meg	
R12	47K	
R13	220K	
R14	2.2meg	
R15	220K	
R16	270Ω	
R17	10K	
R18	270K	
R19	47K 1W	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R20	270K	
R21	270K	
R22	220Ω 1W	
R23	180K	
R24	510K	(470K) *
R25	100K	
R26	33K	
R27	100K	
R28	100K	

ITEM No.	RATING	REMARKS
R29	2.2meg	
R30	47K	
R31	220K	
R32	2.2meg	
R33	220K	
R34	270Ω	
R35	10K	
R36	270K	
R37	47K 1W	

ITEM No.	RATING	REMARKS
R38	270K	
R39	270K	
R40	220Ω 1W	
R41	10K 1W	
R42	125Ω 5W	
R43	27Ω 10W	
R44	22Ω 1W	
R45	22Ω 1W	

* Alternate Value.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4600Ω CT	6.4Ω CT	AT-35							
		SEC. 2 6Ω								
		SEC. 1								
T2	4600Ω CT	6.4Ω CT	AT-35							
		SEC. 2 6Ω								

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRAV-LER PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	10"	PM	3-4Ω	SPK-61	10A6A	
SP2	10"	PM	3-4Ω	SPK-61	10A6A	
SP3	5"	PM	3-4Ω	SPK-36	5A07	
SP4	3"	PM	4-6Ω	SPK-28	3A15TZ4.7	
	10"	PM	3-4Ω	SPK-31 ①		

① May be used in some versions.

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA TRAV-LER PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.056A	SR-5 ①	T300 ①	1236AH ①	300 ①	SR500 ②	① Selenium Type
M2	.056A	SR-5 ①	T300 ①	1236AH ①	300 ①	SR500 ②	② Silicon Type

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE
M3	PU-36	86TB *	Not Req.	66 †	Not Req			8TA4-S *	N-8TA-S

* Includes Mount

† Use Mount PT-3

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

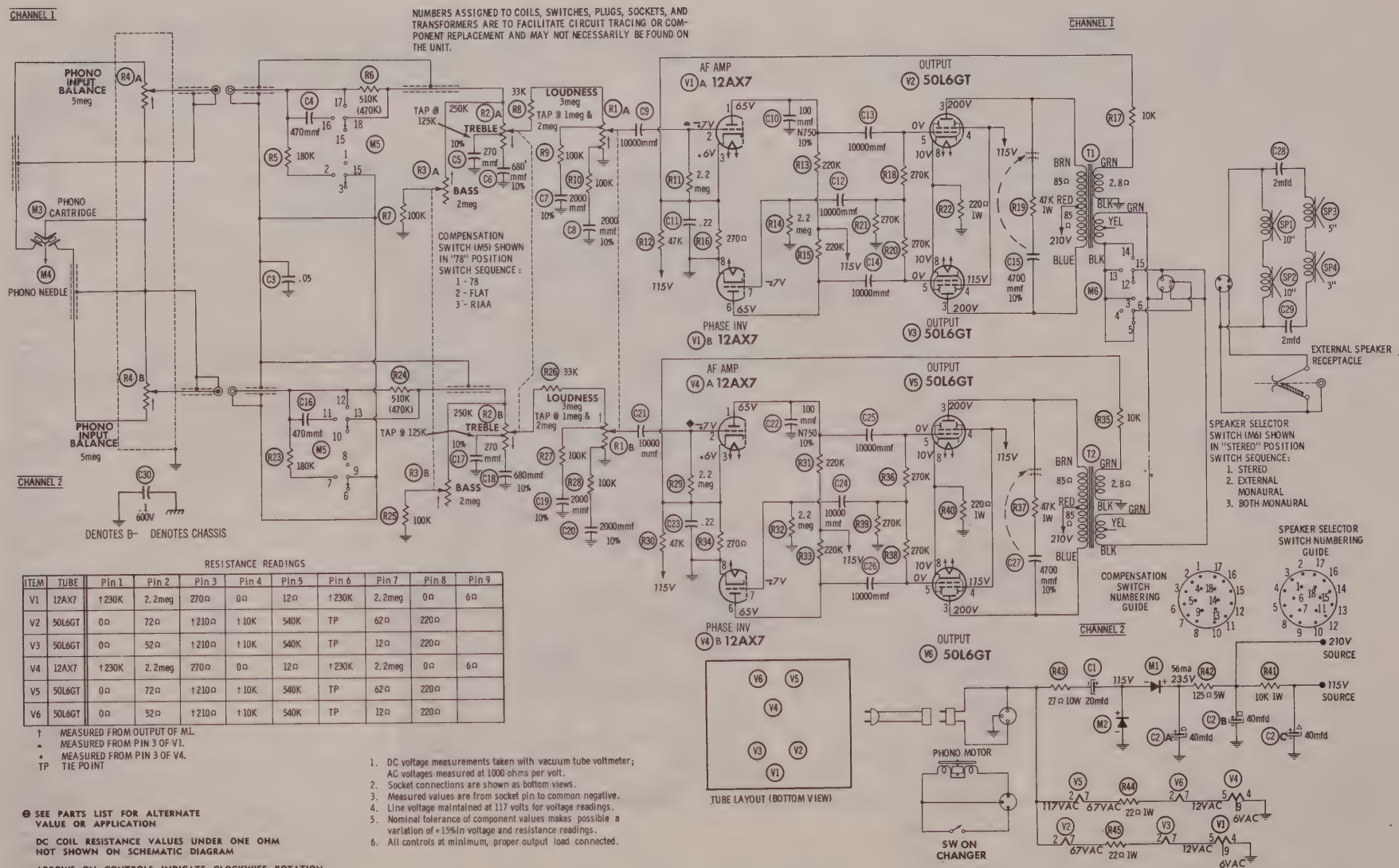
ITEM No.	REPLACEMENT DATA TRAV-LER PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	REMARKS
M4	(78RPM)	W-106STS † or W-106STD ♦	CRA-55 † or CRA-55D ♦	† Jewel ♦ Diamond
	(LP)		CRA-55X † or CRA-55XD ♦	

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M5	Switch	SW-36	Compensator (Rotary Type)
M6	Switch	SW-34	Speaker (Rotary Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†230K	2.2meg	270Ω	0Ω	12Ω	†230K	2.2meg	0Ω	6Ω
V2	50L6GT	0Ω	72Ω	†210Ω	†10K	540K	TP	62Ω	220Ω	
V3	50L6GT	0Ω	52Ω	†210Ω	†10K	540K	TP	12Ω	220Ω	
V4	12AX7	†230K	2.2meg	270Ω	0Ω	12Ω	†230K	2.2meg	0Ω	6Ω
V5	50L6GT	0Ω	72Ω	†210Ω	†10K	540K	TP	62Ω	220Ω	
V6	50L6GT	0Ω	52Ω	†210Ω	†10K	540K	TP	12Ω	220Ω	

† MEASURED FROM OUTPUT OF M1.
▪ MEASURED FROM PIN 3 OF V1.
◆ MEASURED FROM PIN 3 OF V4.
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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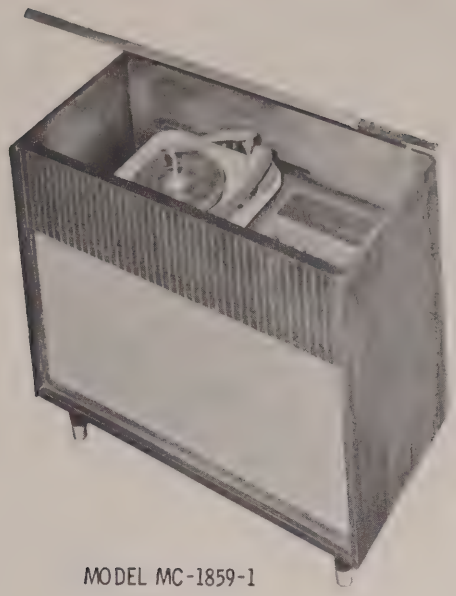
TRAV-LER MODEL 1110

PHOTOFACT* Folder with CIRCUITRACE*

WEBCOR MODELS 1859-1, -1S, 1862-1, 1865-1, 1893-1, 1895-1, 1966-1 Series (Ch. 14X264-1, -2, -3, -4, -5, 265-1, 266-1, -3, 267-1, 276-1, -3, 73X013-1)

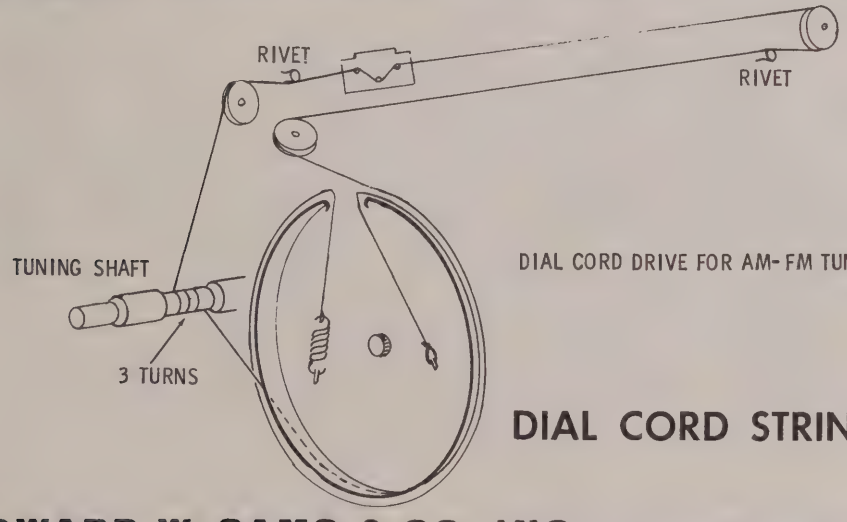
WEBCOR MODELS 1859-1, -1S, 1862-1, 1865-1, 1893-1, 1895-1, 1966-1 Series (Ch. 14X264-1, -2, -3, -4, -5, 265-1, 266-1, -3, 267-1, 276-1, -3, 73X013-1)



MODEL MC-1859-1

TRADE NAME	Webcor Models BC-1859-1, CC-1859-1, MC-1859-1, MC-1859-1S (Ch. 14X264-1, 14X265-1) TP-1862-1, GP-1862-1 (Ch. 14X264-4, 14X276-1) BC-1865-1, CC-1865-1, MC-1865-1 (Ch. 14X264-3, 14X266-1) BC-1893-1, CC-1893-1, MC-1893-1 (Ch. 14X264-2, 14X267-1, 73X013-1) BC-1895-1, CC-1895-1, MC-1895-1 (Ch. 14X264-2, 14X266-3, 73X013-1) BC-1966-1, CC-1966-1, MC-1966-1 (Ch. 14X264-5, 14X276-3) Chassis 14X264-Series are Preamplifiers; 14X265, 14X266, 14X267, 14X276-Series are Power Amplifiers 73X013-1 is FM-AM Tuner
MANUFACTURER	Webcor Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 6 Tube Phono Amplifier With Stereo Preamplifier And 4 Speed Automatic Record Changer (Models 1893, 1895 Series Use 7 Tube FM-AM Tuner)
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 67 Watts, .65 Amp. @ 117 Volts AC (Phono, Less Motor)

MODELS 1859, 1865, 1893, 1895 SERIES USE RECORD CHANGER PART #B158-9, 1862 SERIES USE PART #B158-13, 1966 USE PART #B158-17. FOR SERVICE INFORMATION ON RECORD CHANGER - SEE WEBCOR 168 - PHOTOFACT SET 447 FOLDER 13.



DIAL CORD DRIVE FOR AM-FM TUNER

DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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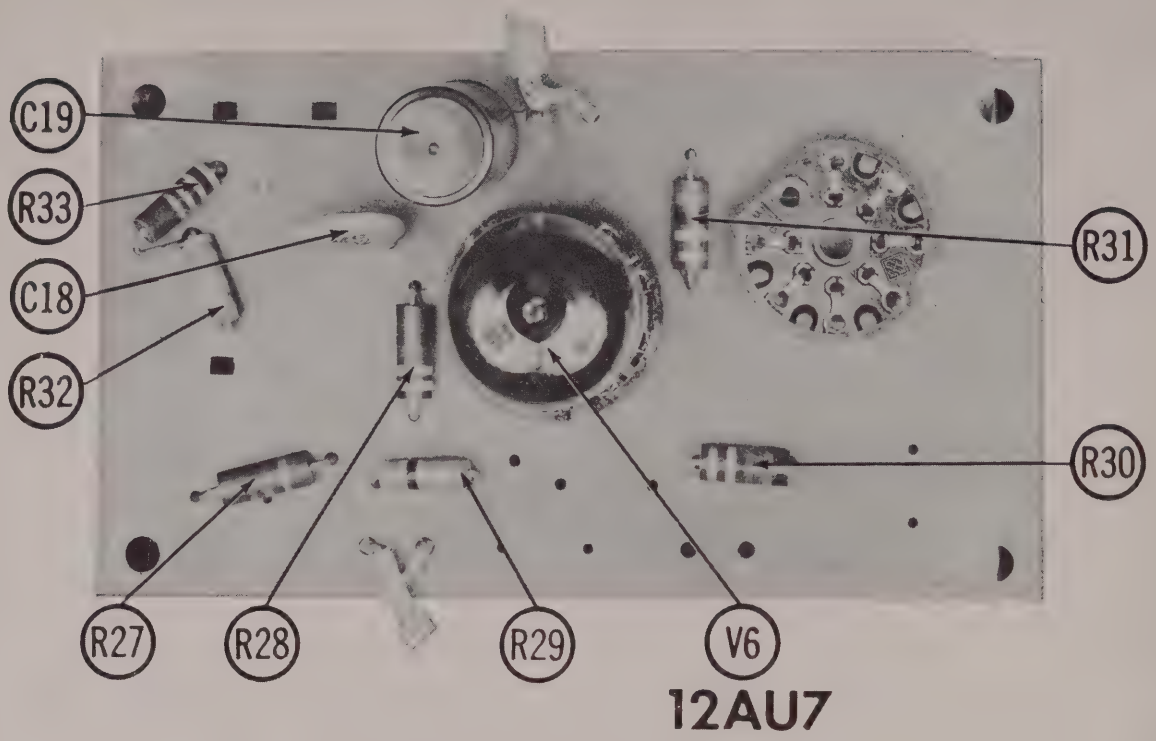
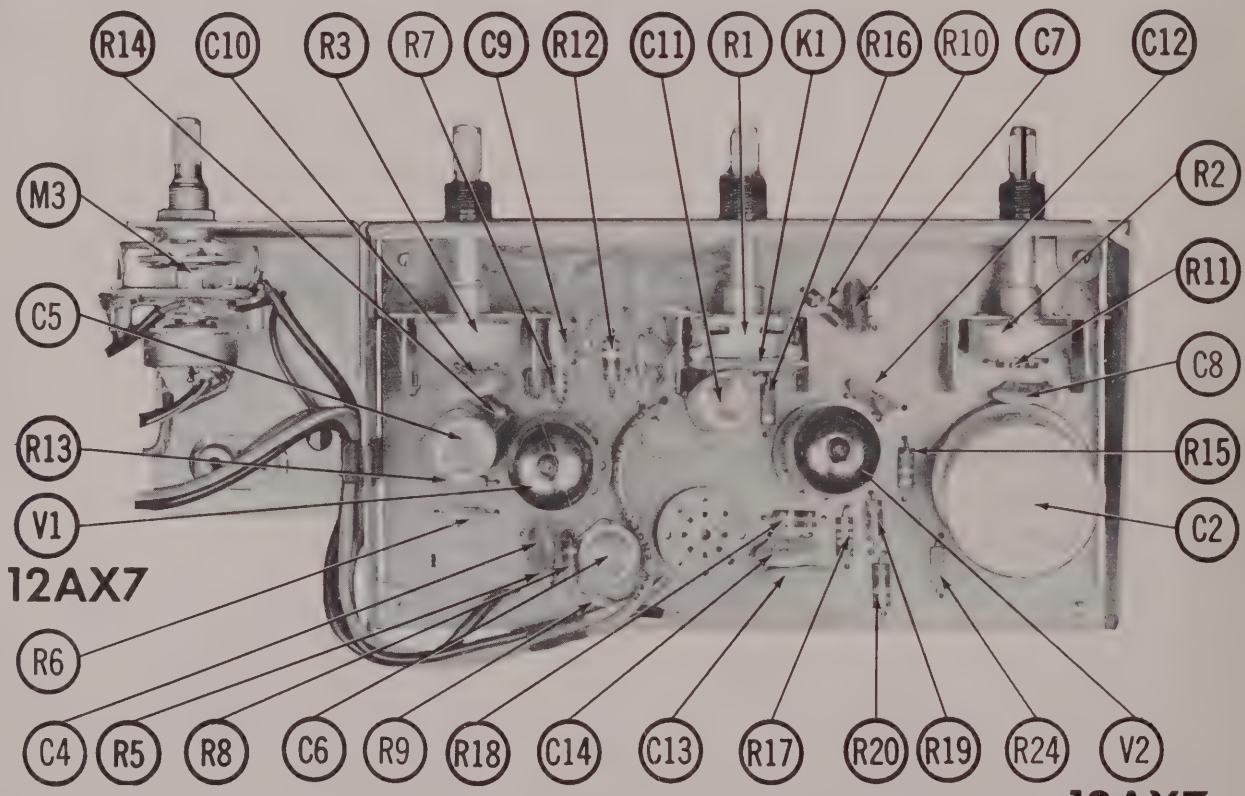
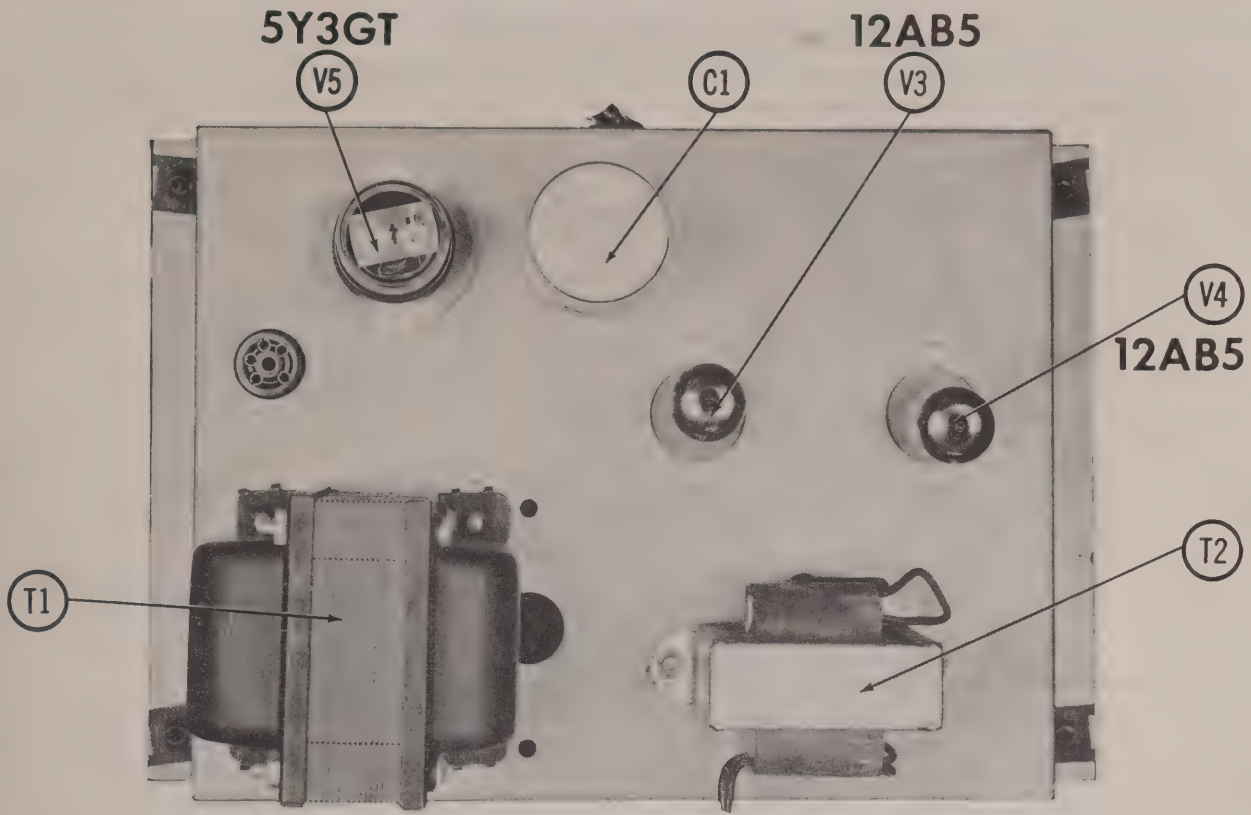


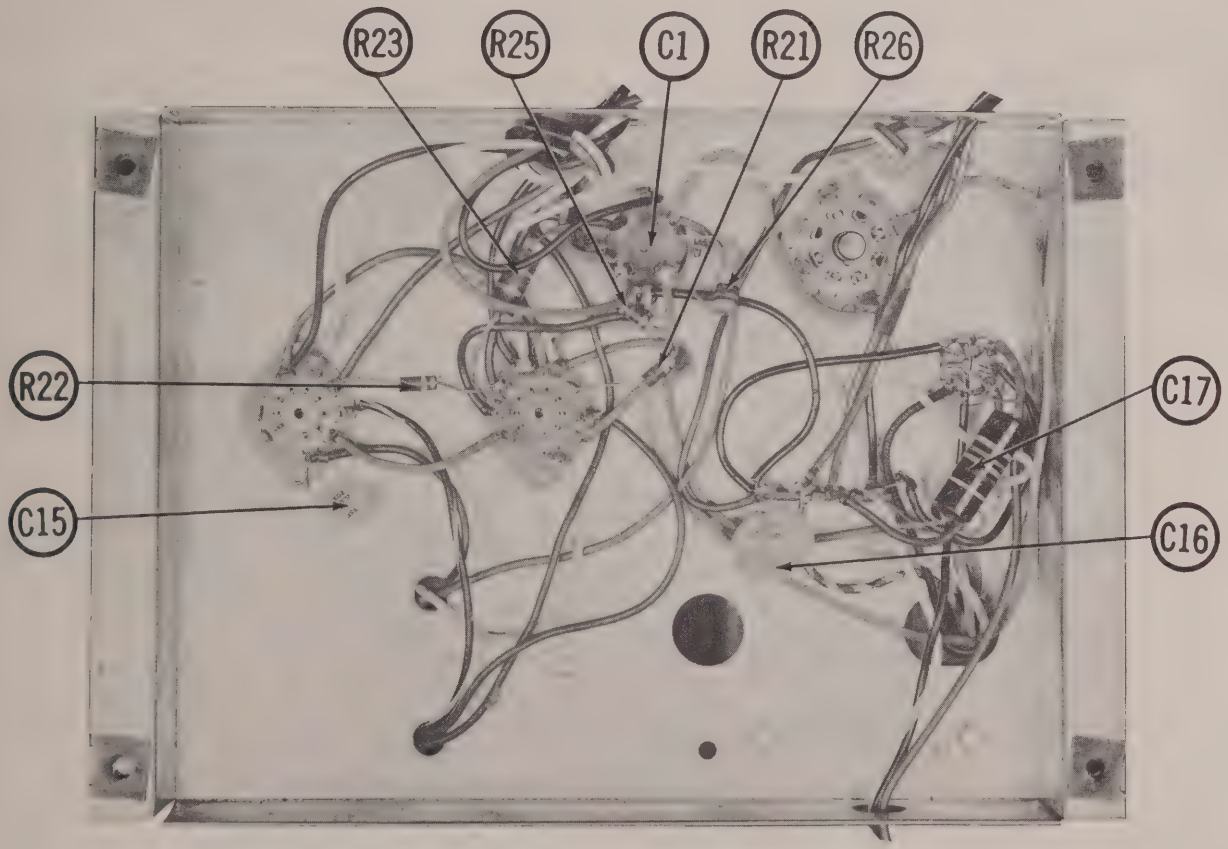
STEREO PREAMP CHASSIS - TOP VIEW



AMPLIFIER CHASSIS - TOP VIEW



OUTPUT CHASSIS - TOP VIEW



OUTPUT CHASSIS - BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	Across AF output	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1420KC	"	Tune to 1420KC signal	"	A6	Adjust for maximum output. Check tracking at 600 and 1000KC

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to RF stator lug of tuning gang. Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe thru 100K to point (A). Common to chassis.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe thru 100K to point (B). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.								
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01mfd	High side to FM RF stator lug of tuning gang. Low side to chassis.	10.7MC (450KC swp.)	FM	Point of non-interference	Vert. Amp. thru 100K to point (A). Low side to chassis.	A7, A8, A9, A10, A11	Disconnect Stabilizing Capacitor. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	"	"	Vert. Amp. thru 100K to point (B). Low side to chassis.	A12	Connect Stabilizing Capacitor. (Observe polarity). Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	240Ω Carbon Resistor	Across FM antenna terminals with 240Ω in high side	108MC (400∿ FM Mod.)	FM	108MC	Across AF output	A13, A14 A15	Adjust for maximum output.
7.	"	"	88MC	"	88MC	"	A16, A17 A18	Adjust for maximum output by compressing or expanding coil turns.

FIG. 1

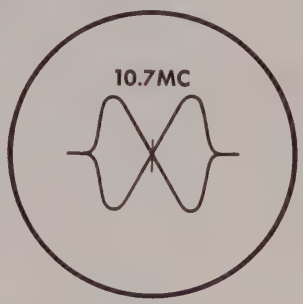
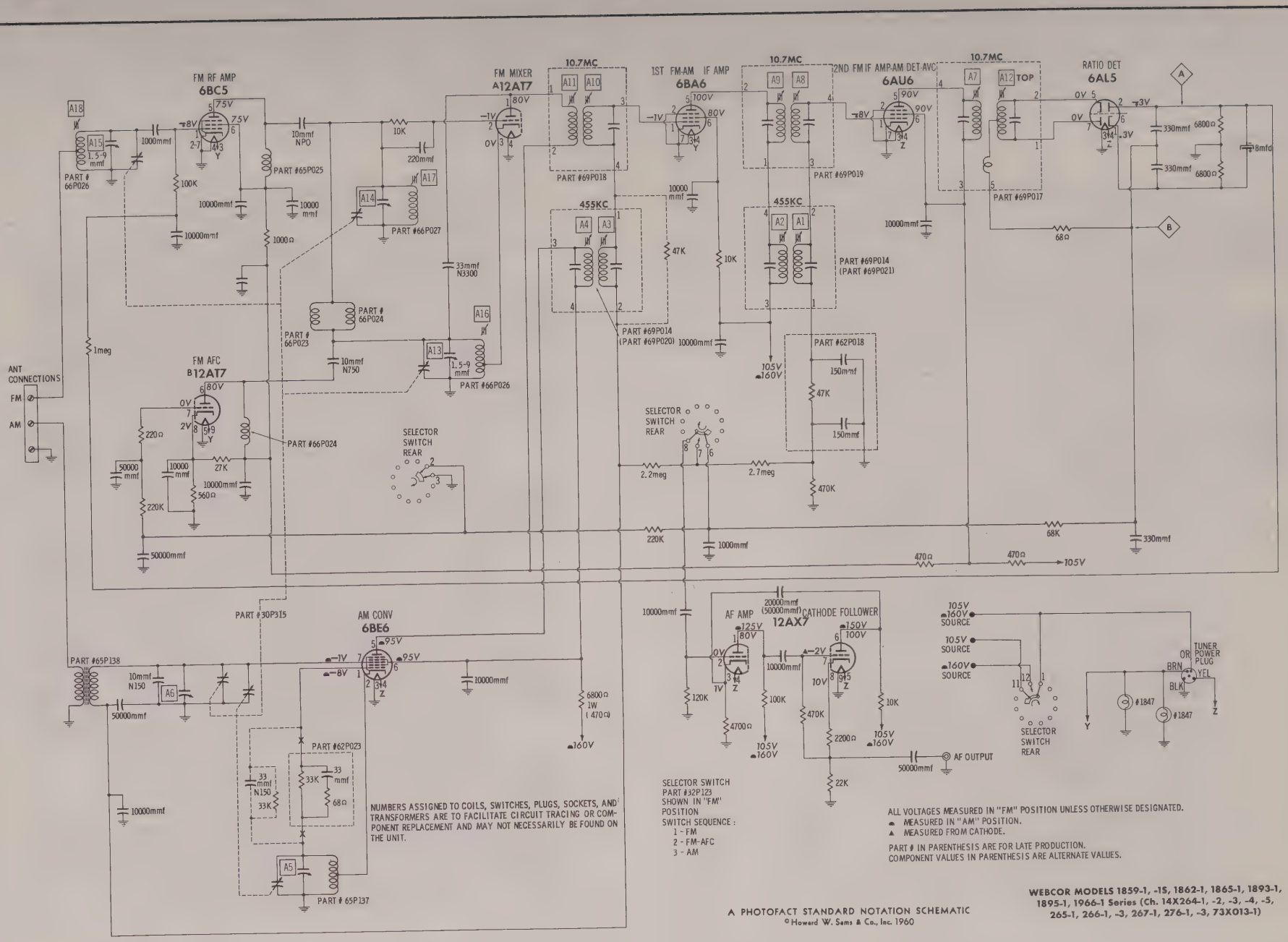


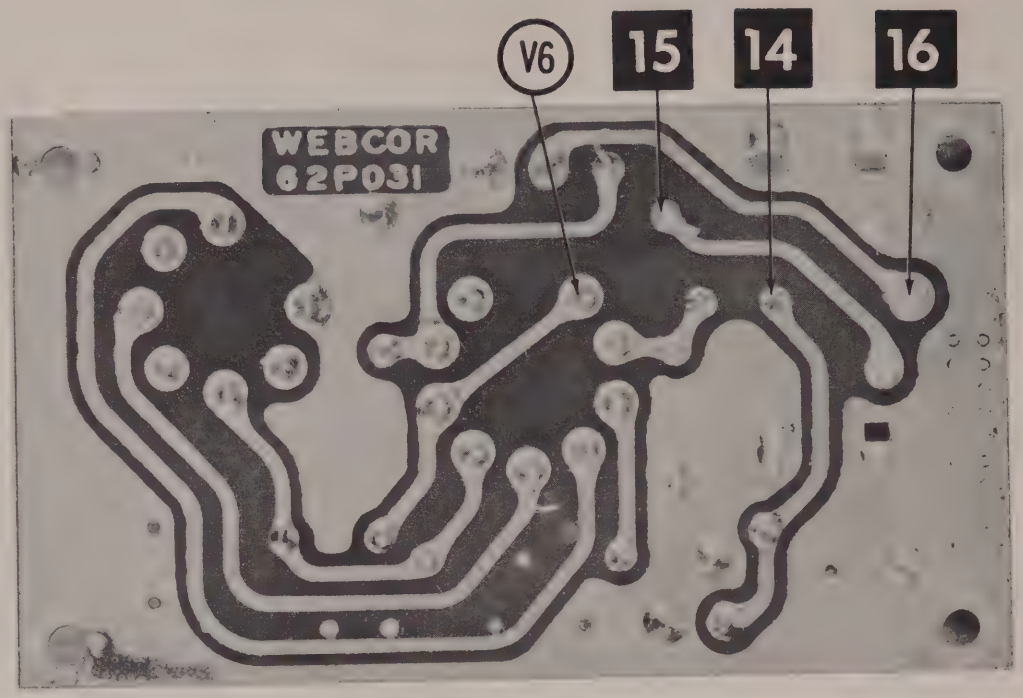
FIG. 2



TUNER SCHEMATIC - CHASSIS 73X013-1

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1960

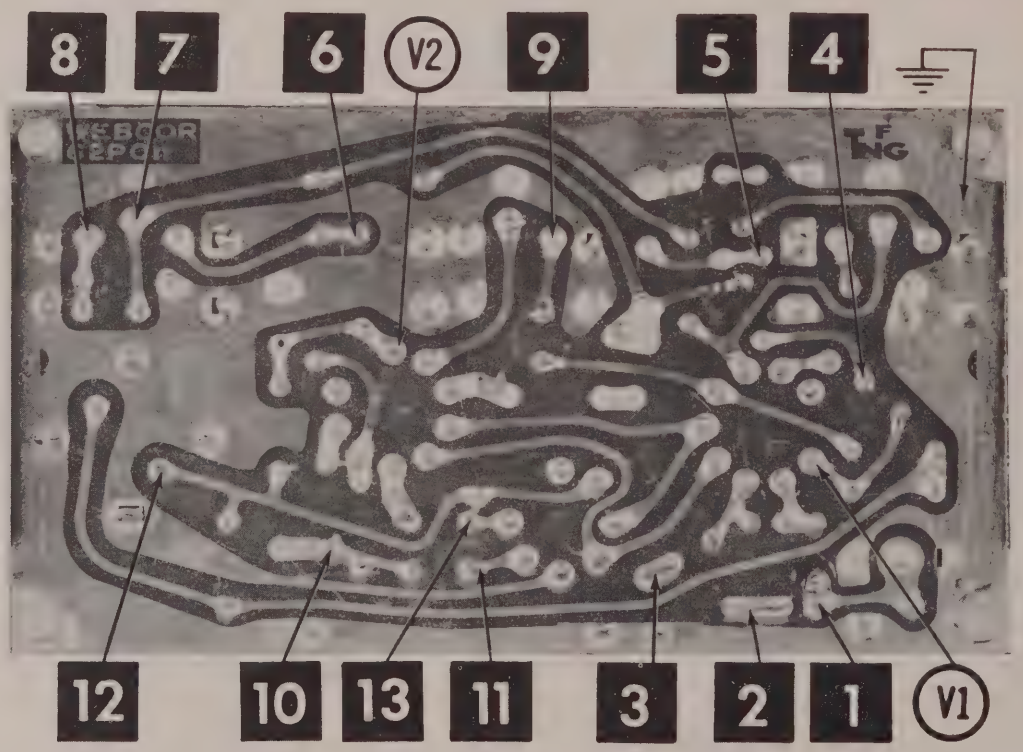
WEBCOR MODELS 1859-1, -15, 1862-1, 1865-1, 1893-1, 1895-1, 1966-1 Series (Ch. 14X264-1, -2, -3, -4, -5, 265-1, 266-1, -3, 267-1, 276-1, -3, 73X013-1)



A Howard W. Sams CIRCUITRACE* Photo

STEREO PREAMP CHASSIS

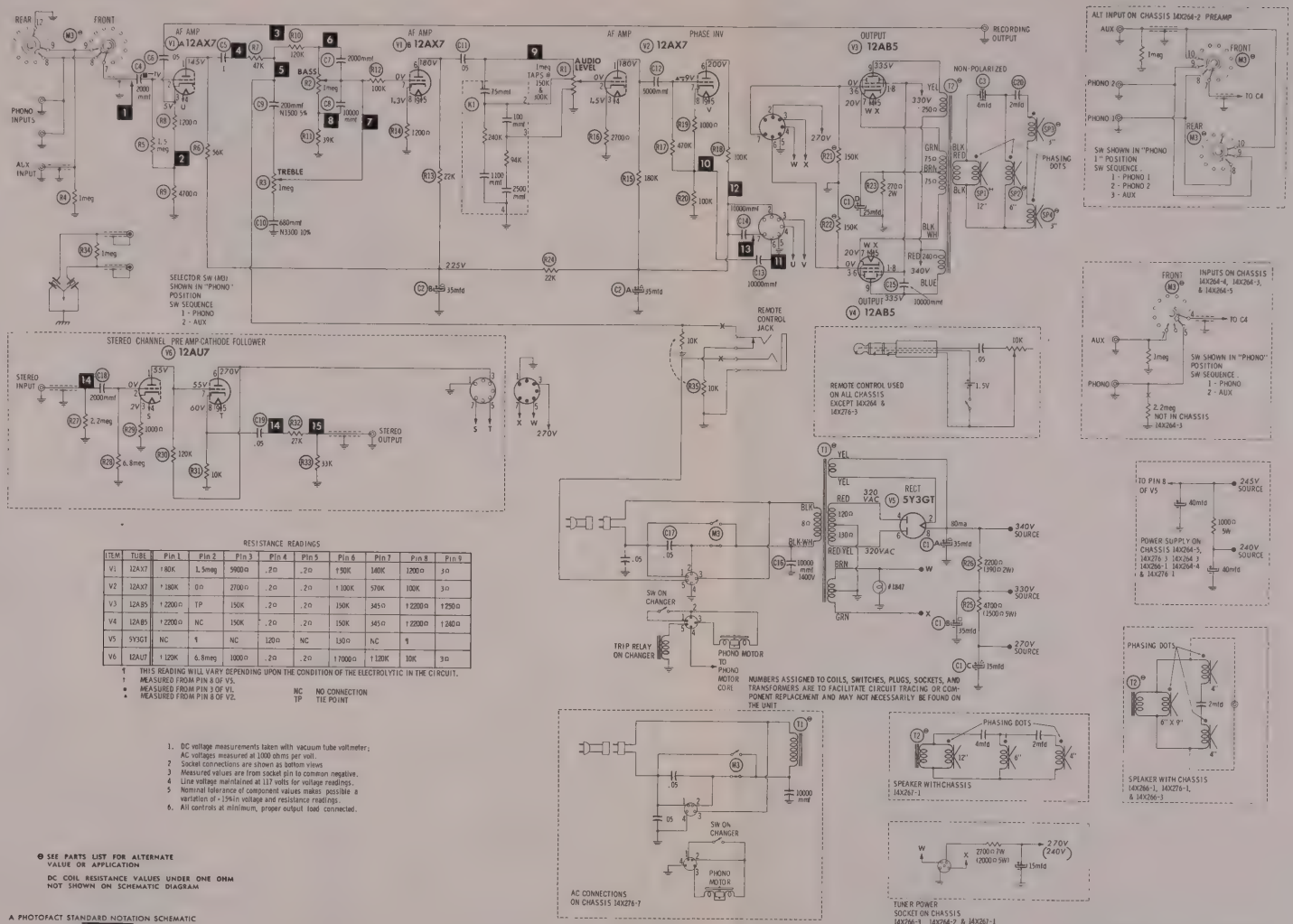
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A Howard W. Sams CIRCUITRACE* Photo

AMPLIFIER CHASSIS

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	↑80K	1.5meg	5900Ω	.2Ω	.2Ω	↑50K	140K	1200Ω	3Ω
V2	12AX7	↑180K	0Ω	2700Ω	.2Ω	.2Ω	↑100K	570K	100K	3Ω
V3	12AB5	↑2200Ω	TP	150K	.2Ω	.2Ω	150K	345Ω	↑2200Ω	↑250Ω
V4	12AB5	↑2200Ω	NC	150K	.2Ω	.2Ω	150K	345Ω	↑2200Ω	↑240Ω
V5	5Y3GT	NC	¶	NC	120Ω	NC	130Ω	NC	¶	
V6	12AU7	↑120K	6.8meg	1000Ω	.2Ω	.2Ω	↑7000Ω	↑120K	10K	3Ω

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 8 OF V5.
■ MEASURED FROM PIN 3 OF V1.
▲ MEASURED FROM PIN 8 OF V2.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

© Howard W. Sams & Co., Inc. 1960

WEBCOR MODELS 1859-1, -15, 1862-1, 1865-1, 1893-1, 1895-1, 1966-1 Series (Ch. 14X264-1, -2, -3, -4, -5, 265-1, 266-1, -3, 267-1, 276-1, -3, 73X013-1)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	AF Amplifier	12AX7
V2	AF Amp. - Phase Inverter	12AX7
V3	Output	12AB5
V4	Output	12AB5
V5	Rectifier	5Y3GT
V6	Stereo Channel Preamp. - Stereo Channel Cath. Foll.	12AU7

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲35	375	30P306	AFH4-52	D0150	FP421.4	TMQ-16	TVL-4771	
B	■35	375			BBR25-25		TD-25-25	TVA-1205	
C	▲15	350							
D	25	25							
C2A	▲35	300	30P310	PWH4-58-65	B0450	PFP284		PCLS-2573*	
B	▲35	300							
C3	4	25	30P278-2	PRS7405	BBR8-150 †	TCN504		TVAS-1202.2*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together.
Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C5	.1 400V		P4151N-1	DF-104	BC6P1J	4DP-3-104	ACE601	4SE-P10
C6	.05 400V		P4141N-047	DF-503	BC6S47J	4DP-3-503	ACE6147	4SE-S47
C7	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C9	200 N1500 5%	#30P322				*		
C10	680 N3300 10%	#30P323				*		
C11	.05 400V		P4151N-047	DF-503	BC6S47J	4DP-3-503	ACE6147	4SE-S47
C12	5000		BPD-005	DD-502	BYA10D5	CCD-503	B-250	5HK-D50
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D10
C16	10000 1400V		DAC-7	DD-103	HVE16S1	16DP-3-103	2HV-110	BL-S10
C17	.05 400V		P488N-05	DF-503	CUB4S47	4DP-3-503	GEM-415	4TM-S5

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C18	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C19	.05 400V		P4151N-047	DF-503	BC6S47J	4DP-3-503	ACE6147	4SE-S47
C20	2mfd 25V		P282Z-2.0		MP2W2			118P2050252

\# Webcor Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg *	1/2	31P131					Audio Level
R2	1meg	1/2	31P130					Bass
R3	1meg	1/2	31P130					Treble

* Taps @ 150K and 300K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	1meg	
R5	1.5meg	
R6	56K	
R7	47K	
R8	1200Ω	
R9	4700Ω	
R10	120K	
R11	39K	
R12	100K	
R13	22K	
R14	1200Ω	

ITEM No.	RATING	REMARKS
R15	180K	
R16	2700Ω	
R17	470K	
R18	100K	
R19	1000Ω	
R20	100K	
R21	150K	Note 1
R22	150K	Note 1
R23	270Ω 2W	
R24	22K	
R25	4700Ω	(1500Ω 5W) *

ITEM No.	RATING	REMARKS
R26	2200Ω	(390Ω 2W) *
R27	2.2meg	
R28	6.8meg	
R29	1000Ω	
R30	120K	
R31	10K	
R32	27K	
R33	33K	
R34	1meg	
R35	10K	

Note 1. Ch. 14X266-1, -3, 14X276-1, -3 use 470K in this application.
* Alternate Value

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	WEBCOR PART No.	REPLACEMENT DATA
K1	Tone Compensation	75mmf, 100mmf, 1100mmf, 2500mmf, 94K, 240K	62P019	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .65A	640VCT @ .080A	5V @ 2A	68P046 ①	22R32 ②	P-2884 ②		P-8176 ②	22R32 ②	
	SEC. 3	SEC. 4	SEC. 5							
	12.6VCT @ .9A									

① Ch. 14X265-1. Ch. 14X266-1, 14X276-1, -3 use Part #68P050. Ch. 14X266-3 use Part #68P060. Ch. 14X267-1 use Part #68P048.
② Parallel and phase 6.3V windings. Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.1	SEC.	WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω CT	6-8Ω	67P059 ①							
	PRI.2									
	10Ω CT									

① Ch. 14X265-1 & 14X267-1. Ch. 14X266-1, -3, 14X276-1, -3 use Part #67P056.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	76P055 ①	12A1Z6.6	① Models 1859, 1893
SP2	6"	PM	6-8Ω	76P056 ①	6A1Z8	② Two may be used in some versions of Models 1859, 1893 replacing Part #76P072.
SP3	3"	PM	6-8Ω	76P072 ①	3A15T	
SP4	3"	PM	6-8Ω	76P072 ②	3A15T	
	3"	PM	6-8Ω	76P043 ②		
	6" x 9"	PM	6-8Ω	76P051 ③	69A3Z7	
	4"	PM	20-22Ω	76P050 ③	4A1Z22	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M1	21P573 ① 21P549 ②	† 13TB *	Not Req.	†† 66 †	Not Req.			† 8TA4-S * or ♦ 8TA4-D *	Not Req.

① Stereo Models
② Monaural Models
† Jewel
♦ Diamond
* Includes Mounting
†† Use Mount PT-3

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M2	(78RPM)	†W-204DS * or ♦W-204DD1 *	†E98 or ♦E98D	† Jewel ♦ Diamond
	(LP)		†E98X or ♦E98XD	* Includes Cartridge

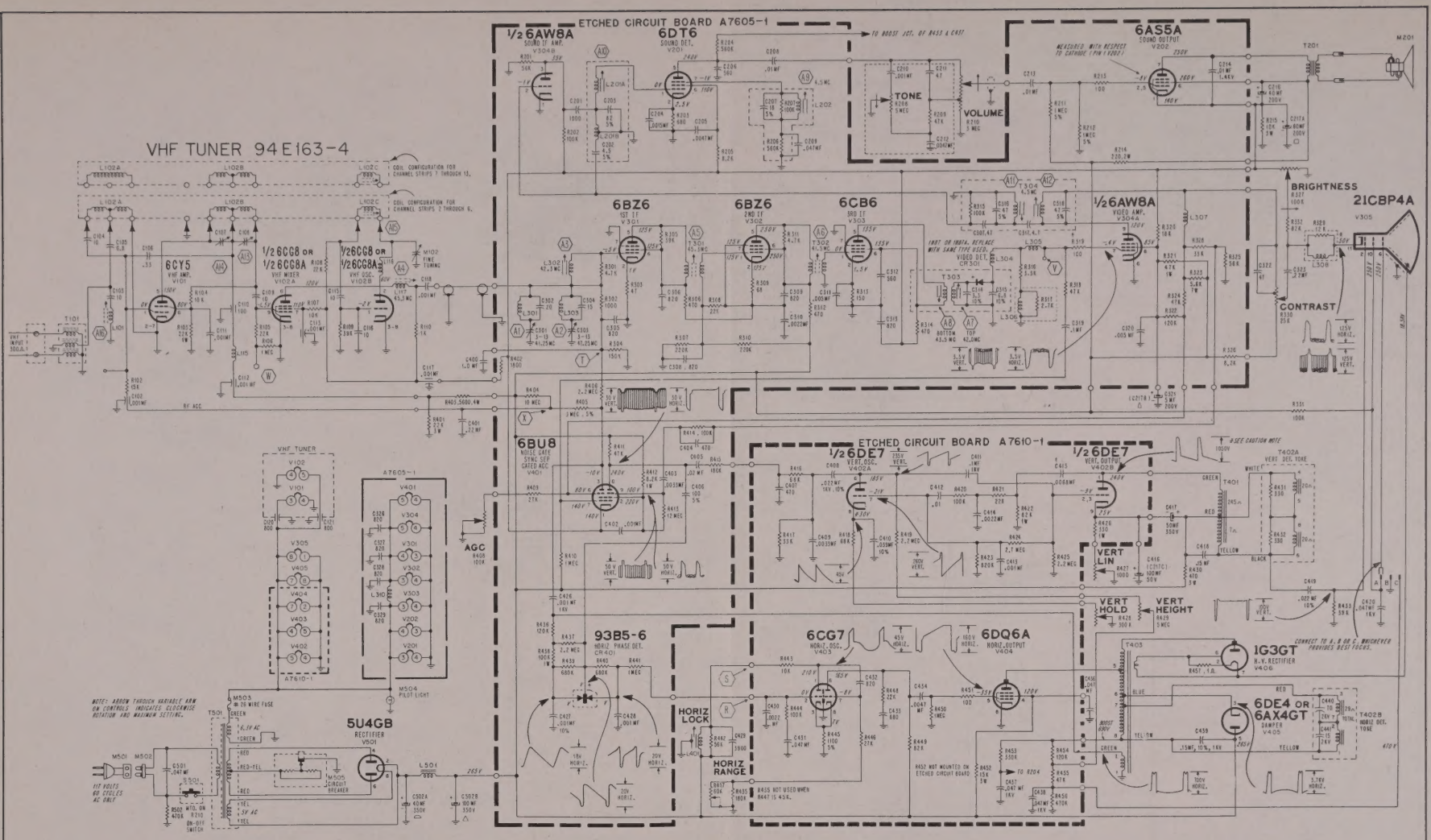
MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M3	Switch	32P124	Function, Chassis 14X264-1, 14X264-2
	Switch	32P125	Function, Chassis 14X264-4
	Switch	32P126	Function, Chassis 14X264-3, 14X264-5
	Printed Board	62P031	Preamp. Sub Chassis
	Printed Board	62P011	Preamp. Chassis 14X264-1, -4
	Printed Board	62P013	Tuner

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	39P148-10C	Amplifier Controls
Knob	49X297-C	Tuning, Tuner Chassis 73X013-1
Knob	49X297-2C	Selector, Tuner Chassis 73X013-1
Pointer	45P2451	Tuner Chassis 73X013-1
Dial Glass	77P010-1	Tuner Chassis 73X013-1
Cabinet	92X064-2	Blond, Model 1859
Cabinet	92X064-3	Cherry, Model 1859
Cabinet	92X064-1	Mahogany, Model 1859
Cabinet	92X075-1	Model TP1862
Cabinet	92X075-2	Model GP1862
Cabinet	92X065-1	Mahogany, Model 1865
Cabinet	92X065-2	Blond, Model 1865
Cabinet	92X065-3	Cherry, Model 1865
Cabinet	92X077-1	Mahogany, Model 1966
Cabinet	92X077-2	Blond, Model 1966
Cabinet	92X077-3	Cherry, Model 1966
Cabinet	92X069-1	Mahogany, Model 1895
Cabinet	92X069-2	Blond, Model 1895
Cabinet	92X069-3	Cherry, Model 1895
Cabinet	92X064-5	Blond, Model 1893
Cabinet	92X064-6	Cherry, Model 1893
Cabinet	92X064-4	Mahogany, Model 1893
Leg	110P105-2	Blond, Models 1859, 1893
Leg	110P105-3	Cherry, Models 1859, 1893
Leg	110P105-1	Mahogany, Models 1859, 1893
Leg	40P345-1	Mahogany, Model 1966
Leg	40P345-2	Blond, Model 1966
Leg	110X114	Cherry, Model 1966
Leg		

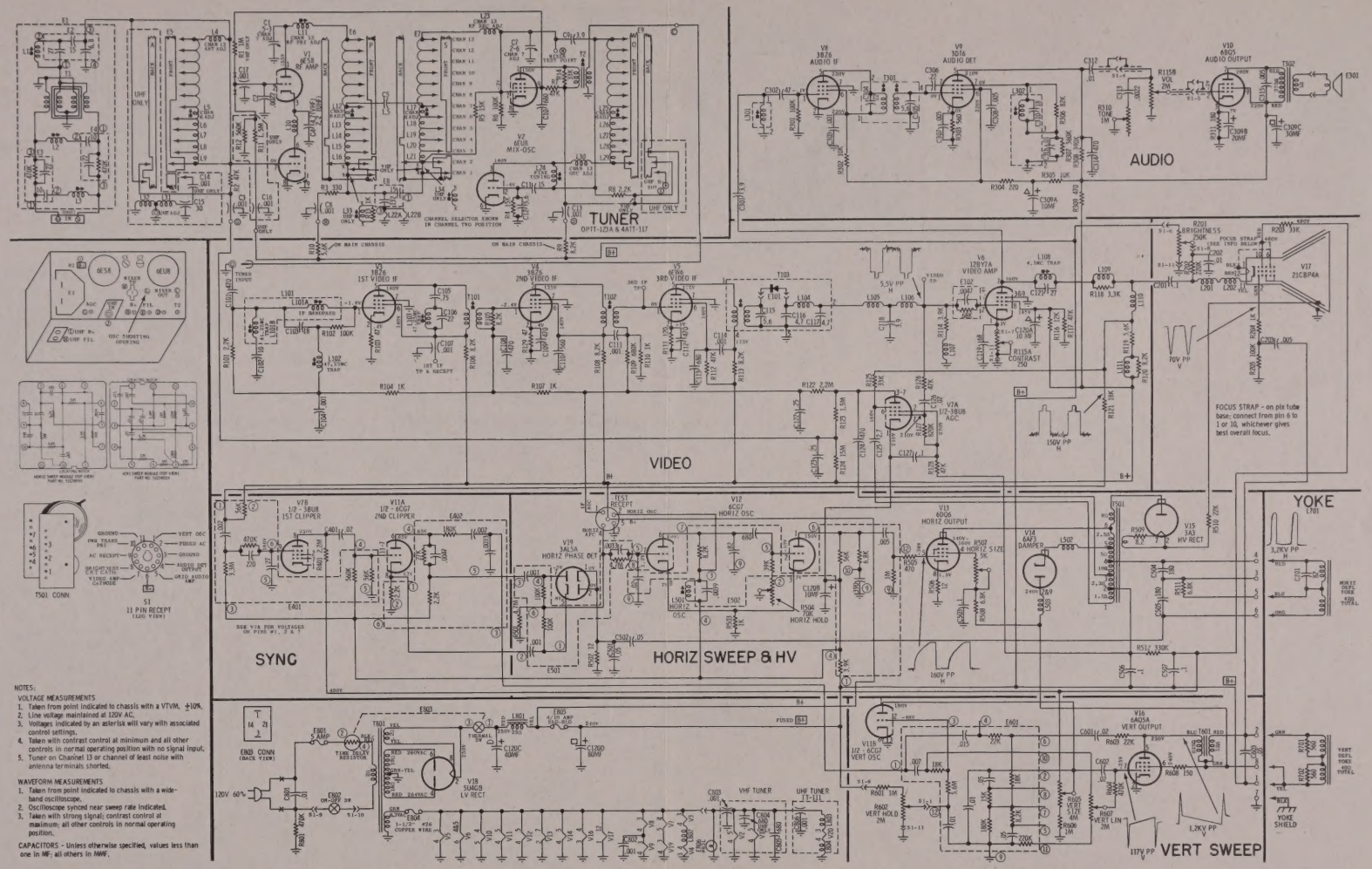


ADMIRAL MODELS C22M11, C22M12, C22M13, C22M22, C22M23, C22M24, C22UM11, C22UM12, C22UM13, C22UM22, C22UM23, C22UM24, L22M22, L22M23, L22M24, L22UM22, L22UM23, L22UM24, T22M11, T22M12, T22M13, T22UM11, T22UM12, T22UM13 (Ch. 20S6, 20US6)

Schematic Diagram Courtesy of Admiral Corporation

← ADMIRAL

MOTOROLA ↓


TUNER
OPTI-IZIA & AATT-317
AUDIO
VIDEO
SYNC
HORIZ SWEEP & HV
YOKE
VERT SWEEP
FOCUS STRAP - on pix tube base; connect from pin 6 to 1 or 10, whichever gives best overall focus.
T501 CONN
S1
11 PIN RECEPT
(LEO VIEW)
E802 CONN
(BACK VIEW)
NOTES:
VOLTAGE MEASUREMENTS
1. Taken from point indicated to chassis with a VTVM, ±10%.
2. Line voltage maintained at 120V AC.
3. Voltages indicated by an asterisk will vary with associated control settings.
4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
WAVEFORM MEASUREMENTS
1. Taken from point indicated to chassis with a wide-band oscilloscope.
2. Oscilloscope synced near sweep rate indicated.
3. Taken with strong signal; contrast control at maximum; all other controls in normal operating position.
CAPACITORS - Unless otherwise specified, values less than one in MF; all others in MMF.

MOTOROLA MODELS A21C11B, M, A21K138M, A21K139B, M, W, A21K140B, M, A21K141CW, Y21C10CW, Y21K125B, M, Y21K126B, M, W, Y21K127CW, Y21K129B, M, MC, Y21K130CW, Y21T67BG, MG, Y21T68B, M, W, 21C10CW, 21K125B, M, 21K126B, M, W, 21K127CW, 21K129B, M, MC, 21K130CW, 21T67BG, MG, 21T68B, M, W, (Ch. TS-564, Y, WTS-564)

Schematic Diagram Courtesy of Motorola Inc.

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SET 473 FOLDER 19-S